US012109287B2

(12) **United States Patent**
Naseer et al.

(10) **Patent No.: US 12,109,287 B2**
(45) **Date of Patent: Oct. 8, 2024**

(54) **COMPOSITIONS AND METHODS FOR ALTERING THE COLOR OF HAIR**

(71) Applicant: **L'Oreal**, Paris (FR)

(72) Inventors: **Shahid Mohammad Naseer**, Old Bridge, NJ (US); **Aakash Jagat Parekh**, Edison, NJ (US); **Sivaramakrishnan Muthukrishnan**, Bridgewater, NJ (US)

(73) Assignee: **L'OREAL**, Paris (FR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 143 days.

(21) Appl. No.: **17/878,001**

(22) Filed: **Jul. 31, 2022**

(65) **Prior Publication Data**

US 2024/0033198 A1 Feb. 1, 2024

(51) **Int. Cl.**

A61Q 5/10	(2006.01)
A61K 8/34	(2006.01)
A61K 8/36	(2006.01)
A61K 8/365	(2006.01)
A61K 8/41	(2006.01)
A61K 8/92	(2006.01)

(52) **U.S. Cl.**

CPC ***A61K 8/365*** (2013.01); ***A61K 8/342*** (2013.01); ***A61K 8/361*** (2013.01); ***A61K 8/41*** (2013.01); ***A61K 8/922*** (2013.01); *A61K 2800/4322* (2013.01)

(58) **Field of Classification Search**

CPC A61K 8/365; A61K 8/342; A61K 8/361; A61K 8/41; A61K 8/922; A61K 2800/4322; A61K 5/10

USPC 8/405

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,261,002	A	10/1941	Ritter
2,271,378	A	1/1942	Searle
2,273,780	A	2/1942	Dittmar
2,375,853	A	5/1945	Kirby et al.
2,388,614	A	11/1945	Kirby et al.

(Continued)

FOREIGN PATENT DOCUMENTS

CN	106955248	A	7/2017
CN	110193008	A	9/2019

(Continued)

OTHER PUBLICATIONS

Porter, M.R., "Handbook of Surfactants," published by Blackie & Son (Glasgow and London), 1991, pp. 116-178.

(Continued)

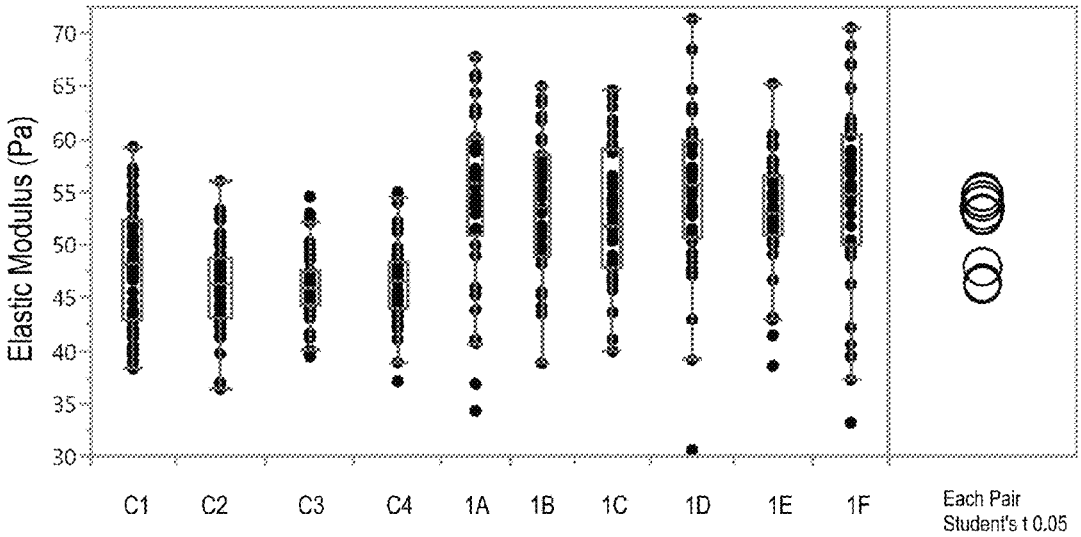
Primary Examiner — Eisa B Elhilo

(74) *Attorney, Agent, or Firm* — THE MARBURY LAW GROUP, PLLC

(57) **ABSTRACT**

The disclosure relates to compositions for altering the color of keratin fibers and methods of using the compositions. The compositions comprise (a) a bonding system comprising (i) at least one first bonding agent chosen from lactic acid and/or salts thereof, and (ii) at least one second bonding agent chosen from amino acids and/or salts thereof; (b) at least one fatty alcohol; (c) at least one fatty acid; (d) at least one alkyl polyglucoside; (e) at least one alkalizing agent; and (f) at least one solvent. The compositions can further comprise one or more oxidation dyes, couplers, oxidizing agents, or combinations thereof.

20 Claims, 7 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

2,454,547	A	11/1948	Bock et al.
2,961,347	A	11/1960	Floyd
3,206,462	A	9/1965	McCarty
3,227,615	A	1/1966	Korden
3,288,770	A	11/1966	Butler
3,412,019	A	11/1968	Hoover et al.
3,472,840	A	10/1969	Stone et al.
3,589,978	A	6/1971	Kamal et al.
3,632,559	A	1/1972	Matter et al.
3,874,870	A	4/1975	Green et al.
3,917,817	A	11/1975	Vanlerberghe et al.
3,929,990	A	12/1975	Green et al.
3,966,904	A	6/1976	Green et al.
4,001,432	A	1/1977	Green et al.
4,003,699	A	1/1977	Rose et al.
4,005,193	A	1/1977	Green et al.
4,013,787	A	3/1977	Vanlerberghe et al.
4,025,617	A	5/1977	Green et al.
4,025,627	A	5/1977	Green et al.
4,025,653	A	5/1977	Green et al.
4,026,945	A	5/1977	Green et al.
4,027,020	A	5/1977	Green et al.
4,031,307	A	6/1977	DeMartino et al.
4,075,136	A	2/1978	Schaper
4,131,576	A	12/1978	Iovine et al.
4,133,957	A	1/1979	Riew
4,137,180	A	1/1979	Naik et al.
4,166,894	A	9/1979	Schaper
4,172,887	A	10/1979	Vanlerberghe et al.
RE30,199	E	1/1980	Rose et al.
4,189,468	A	2/1980	Vanlerberghe et al.
4,197,865	A	4/1980	Jacquet et al.
4,217,914	A	8/1980	Jacquet et al.
4,277,581	A	7/1981	Vanlerberghe et al.
4,348,202	A	9/1982	Grollier et al.
4,349,532	A	9/1982	Vanlerberghe et al.
4,362,528	A	12/1982	Grollier et al.
4,381,919	A	5/1983	Jacquet et al.
4,422,853	A	12/1983	Jacquet et al.
4,579,732	A	4/1986	Grollier et al.
4,591,610	A	5/1986	Grollier
4,608,250	A	8/1986	Jacquet et al.
4,761,273	A	8/1988	Grollier et al.
4,772,462	A	9/1988	Boothe et al.
4,777,040	A	10/1988	Grollier et al.
4,855,130	A	8/1989	Konrad et al.
4,874,554	A	10/1989	Lange et al.
4,948,579	A	8/1990	Jacquet et al.
4,970,066	A	11/1990	Grollier et al.
5,061,289	A	10/1991	Clausen et al.
5,196,189	A	3/1993	Jacquet et al.
5,380,340	A	1/1995	Neunhoeffer et al.
5,534,267	A	7/1996	Neunhoeffer et al.
5,663,366	A	9/1997	Neunhoeffer et al.
5,708,151	A	1/1998	Möckli
5,766,576	A	6/1998	Löwe et al.
5,951,969	A	9/1999	Golinski et al.
5,985,803	A	11/1999	Rizvi et al.
6,099,592	A	8/2000	Vidal et al.
6,284,003	B1	9/2001	Rose et al.
6,338,741	B1	1/2002	Vidal et al.
6,358,502	B1	3/2002	Tanabe et al.
6,645,258	B2	11/2003	Vidal et al.
6,730,789	B1	5/2004	Birault et al.
7,507,261	B2	3/2009	Nobuto et al.
8,236,063	B2	8/2012	Reichert et al.
8,241,370	B2	8/2012	Legrand et al.
9,095,518	B2	8/2015	Pressly et al.
9,114,088	B2	8/2015	Konno et al.
9,326,926	B2	5/2016	Pressly et al.
9,597,273	B2	3/2017	Pressly et al.
10,987,291	B2	4/2021	Manneck et al.
11,160,739	B1	11/2021	Shi et al.
11,337,906	B2	5/2022	Lee et al.
11,559,474	B2	1/2023	Degeorge et al.
11,596,588	B2	3/2023	Machover et al.
11,857,660	B2	1/2024	Shi et al.
2001/0052354	A1	12/2001	Nishibe et al.
2002/0050013	A1	5/2002	Vidal et al.
2003/0019051	A9	1/2003	Vidal et al.
2004/0235700	A1	11/2004	Legrand et al.
2006/0140887	A1	6/2006	Molenda et al.
2007/0107142	A1	5/2007	Nguyen et al.
2008/0317687	A1	12/2008	Howe et al.
2010/0305064	A1	12/2010	Walsh
2011/0150804	A1	6/2011	Nojiri et al.
2012/0005843	A1*	1/2012	Benade C07C 235/08 8/408
2012/0031423	A1	2/2012	Wood et al.
2012/0048288	A1	3/2012	Reichert et al.
2012/0114583	A1	5/2012	Giesen et al.
2012/0329650	A1	12/2012	Lopez-Cervantes
2013/0125914	A1	5/2013	Battermann et al.
2013/0149274	A1	6/2013	Nguyen et al.
2013/0156716	A1	6/2013	Yontz
2014/0158150	A1	6/2014	Schoepgens et al.
2014/0171354	A1	6/2014	Miralles et al.
2014/0246041	A1	9/2014	Krueger
2015/0004117	A1	1/2015	Tan et al.
2015/0004119	A1	1/2015	Tan et al.
2015/0034119	A1	2/2015	Pressly et al.
2015/0037270	A1	2/2015	Pressly et al.
2015/0037271	A1	2/2015	Pressly et al.
2015/0202125	A1	7/2015	Charrier et al.
2015/0202142	A1	7/2015	Charrier et al.
2015/0283041	A1	10/2015	Benn et al.
2015/0290101	A1	10/2015	Pressly et al.
2015/0305469	A1	10/2015	Paul
2015/0328102	A1	11/2015	Pressly et al.
2016/0175238	A1	6/2016	Shin et al.
2016/0235649	A1	8/2016	Streuli
2017/0027832	A1	2/2017	Wang
2017/0035667	A1*	2/2017	Benn A61K 8/41
2017/0246094	A1	8/2017	Dreher et al.
2017/0273881	A1	9/2017	Facheris et al.
2018/0021600	A1	1/2018	Kobayashi et al.
2018/0042830	A1*	2/2018	Dreher A61K 8/41
2018/0116930	A1	5/2018	Degeorge et al.
2018/0116942	A1	5/2018	Mahadeshwar et al.
2018/0177690	A1	6/2018	Boulineau et al.
2018/0280286	A1	10/2018	Elsen-Wahrer et al.
2018/0353404	A1	12/2018	Nöcker et al.
2019/0125650	A1	5/2019	Lee et al.
2019/0201309	A1*	7/2019	Machover A61K 8/447
2021/0121385	A1	4/2021	Muller et al.
2021/0154116	A1	5/2021	Lee et al.
2021/0196600	A1	7/2021	Shi et al.
2021/0196606	A1*	7/2021	Shi A61Q 5/065
2021/0346261	A1	11/2021	DeGeorge et al.
2022/0062142	A1	3/2022	Henry
2023/0025989	A1	1/2023	Shi
2023/0036005	A1	2/2023	Shi
2023/0037788	A1	2/2023	Shi et al.

FOREIGN PATENT DOCUMENTS

DE	1220969	B	7/1966
DE	2359399	A1	6/1975
DE	3843892	A1	6/1990
DE	4133957	A1	4/1993
DE	19543988	A1	5/1997
DE	102009028593	A1	2/2011
EP	0080976	A1	6/1983
EP	0122324	A1	10/1984
EP	0714954	A2	6/1996
EP	0770375	A1	5/1997
EP	1810657	A1	7/2007
EP	2123250	A1	11/2009
EP	2301520	A2	3/2011
EP	2460511	A1	6/2012
FR	1492597	A	8/1967
FR	1583363	A	10/1969
FR	2162025	A	7/1973
FR	2252840	A1	6/1975

(56) **References Cited**

FOREIGN PATENT DOCUMENTS

FR	2270846	A1	12/1975
FR	2280361	A2	2/1976
FR	2316271	A1	1/1977
FR	2320330	A1	3/1977
FR	2336434	A1	7/1977
FR	2368508	A2	5/1978
FR	2413907	A1	8/1979
FR	2505348	A1	11/1982
FR	2542997	A1	9/1984
FR	2733749	A1	11/1996
FR	2801308	A1	5/2001
FR	2886136	A1	12/2006
FR	2994088	A1	2/2014
GB	1026978	A	4/1966
GB	1153196	A	5/1969
GB	1546809	A	5/1979
JP	63-154611	A	6/1988
JP	02-019576	A	1/1990
JP	05-163124	A	6/1993
JP	08-198732	A	8/1996
JP	2003-146844	A	5/2003
JP	2005-029486	A	2/2005
JP	2005-255534	A	9/2005
JP	2015-086211	A	5/2015
KR	10-2001-0039848	A	5/2001
WO	94/08969	A1	4/1994
WO	94/08970	A1	4/1994
WO	95/01772	A1	1/1995
WO	95/15144	A1	6/1995
WO	96/15765	A1	5/1996
WO	01/52005	A1	7/2001
WO	2006/066674	A1	6/2006
WO	2006/106390	A2	10/2006
WO	2006/134051	A1	12/2006
WO	2012157657	A1	11/2012
WO	2013075892	A2	5/2013
WO	2013/136480	A1	9/2013
WO	2014/020148	A1	2/2014
WO	2014020167	A2	2/2014
WO	2017/091796	A1	6/2017
WO	2017/207629	A1	12/2017
WO	2018081399	A1	5/2018
WO	2018/183933	A1	10/2018
WO	2018213652	A1	11/2018
WO	2019133785	A1	7/2019
WO	2020/109859	A1	6/2020
WO	2021/138257	A1	7/2021
WO	2021138258	A1	7/2021

OTHER PUBLICATIONS

International Search Report and Written Opinion for counterpart Application No. PCT/US2020/067153, dated Apr. 29, 2021.
Third-Party Submission Under 37 C.F.R. 1.290 for U.S. Appl. No. 17/133,376, filed Jan. 27, 2022 with exhibits.
International Search Report for counterpart Application No. PCT/US2020/067155, dated May 3, 2021.
International Search Report and Written Opinion for counterpart Application No. PCT/US2021/39047, dated Nov. 2, 2021.
Mintel: "One-Touch Color," Hoyu, XP55820021, Record ID 4957439, dated Jul. 13, 2017.
French Search Report and Written Opinion for counterpart French Application No. 2109798, dated Jun. 7, 2022.
Mintel: "Whipped Hair Color," Hoyu, Record ID 7277945, XP05592777, Feb. 20, 2020.
Mintel: "Beard Color," Hoyu Indonesia, Record No. 8923967, XP055927764, Aug. 16, 2001.
Mintel: "Speedy Color Quick Hair Colourant for Men," Hoyu, Record No. 3774805, XP055927781, Feb. 4, 2016.
French Search Report and Written Opinion for counterpart French Application No. 2109796, dated Jun. 3, 2022.
Third-Party Submission Under 37 C.F.R. 1.290 for U.S. Appl. No. 17/132,697, dated Jan. 27, 2022.
International Preliminary Report on Patentability for counterpart Application No. PCT/US2020/067155, dated Jul. 14, 2022.
International Preliminary Report on Patentability for counterpart Application No. PCT/US2020/067153, dated Jul. 14, 2022.
French Search Report and Written Opinion for counterpart Application No. FR 2110537, dated Jun. 27, 2022.
Non-Final Office Action for copending U.S. Appl. No. 17/101,206, dated Aug. 26, 2022.
Non-Final Office Action for copending U.S. Appl. No. 17/133,376, dated Sep. 20, 2022.
Non-Final Office Action for copending U.S. Appl. No. 17/132,697, dated Sep. 20, 2022.
First Examination Report for counterpart Indian Application No. 202217038673, dated Dec. 7, 2022.
First Examination Report for counterpart Indian Application No. 202217039846, dated Dec. 8, 2022.
Final Office Action for copending U.S. Appl. No. 17/133,376, dated Apr. 5, 2023.
Third Party Submission Under 37 CFR 1.290 for copending U.S. Appl. No. 17/132,697, (references only), dated Apr. 9, 2023.
International Search Report and Written Opinion for counterpart Application No. PCT/US2017/058495, dated Jan. 5, 2018.
Non-Final Office Action for copending U.S. Appl. No. 15/339,035, dated Jan. 10, 2018.
Non-Final Office Action for copending U.S. Appl. No. 15/339,035, dated Oct. 5, 2018.
Final Office Action for copending U.S. Appl. No. 15/339,035, dated May 2, 2019.
Non-Final Office Action for copending U.S. Appl. No. 15/339,035 dated Aug. 20, 2019.
Final Office Action for copending U.S. Appl. No. 15/339,035, dated Apr. 10, 2020.
Non-Final Office Action for copending U.S. Appl. No. 15/339,035, dated Jun. 25, 2021.
Final Office Action for copending U.S. Appl. No. 15/339,035, dated Apr. 14, 2022.
Non-Final Office Action for copending U.S. Appl. No. 15/339,035, dated Oct. 27, 2022.
International Preliminary Report on Patentability for counterpart Application No. PCT/US2017/058495, mailed May 9, 2019.
Olaplex with relaxers, OLAPLEX™, pp. 1-2, Apr. 11, 2017, https://olaplex.es/olaplex-with-relaxers/.
Relaxers, Resource Library, Olaplex Education, pp. 1-2, Apr. 11, 2017, https://help.olaplex.com/detail/relaxers.
"Final Written Decision for U.S. Pat. No. 9,668,954 B2," Paper 78, Jul. 30, 2019, Case PGR2018-00025.
Non-Final Office Action for copending U.S. Appl. No. 15/801,425, mailed May 6, 2019.
Final Office Action for copending U.S. Appl. No. 15/801,425, mailed Nov. 12, 2019.
Non-Final Office Action for copending U.S. Appl. No. 15/801,425, mailed Jul. 24, 2020.
Third Party Submission for U.S. Appl. No. 17/379,405, dated May 10, 2022.
U.S. Appl. No. 61/994,709 "Hair Treatment Compositions and Methods," Inventors: Pressly et al., May 16, 2014.
Final Office Action for copending U.S. Appl. No. 15/801,425, dated Feb. 26, 2021.
Non-Final Office Action for copending U.S. Appl. No. 15/801,425, dated Sep. 7, 2021.
Final Office Action for copending U.S. Appl. No. 15/801,425, dated May 31, 2022.
International Search Report and Written Opinion for counterpart Application No. PCT/US2021/047821, dated Feb. 7, 2022.
Database GNPD, "Oil Control Amino Acid Shampoo," Record ID No. 7915997, Mintel.
Database GNPD, "Illuminator Soap with Vitamin C," Record ID No. 4406687, Mintel.
Database GNPD, Anti Hair-Fall Fortifying Serum, Record ID No. 7242637, Mintel.
Database GNPD, "Elixium Plumping Anti-Aging Serumn," Record ID No. 6282723, Mintel.

(56) **References Cited**

OTHER PUBLICATIONS

Non-Final Office Action for copending U.S. Appl. No. 17/003,558, dated Jun. 23, 2022.
Non-Final Office Action for copending U.S. Appl. No. 17/003,558, dated Aug. 8, 2022.
International Preliminary Report on Patentability for counterpart Application No. PCT/US2021/047821, dated Feb. 28, 2023.
Non-Final Office Action for copending U.S. Appl. No. 17/379,405, dated Mar. 2, 2023.
Co-pending U.S. Appl. No. 17/877,999, entitled "Compositions and Methods for Altering the Color of Hair," Inventor: Jennifer Elie, filed Jul. 31, 2022.
French Search Report and Written Opinion for counterpart French Application No. FR2209427, dated Apr. 28, 2023.
Mintel: "Care & Moisture Color Permanent Hair Colour," Schwarzkopf and Henkel, Record ID 8511329, XP093042655, dated Feb. 24, 2021.
Mintel: "Colour and Protect Permanent Colouration," Schwarzkopf and Henkel, Record ID 8501329, XP093042658, dated Feb. 18, 2021.
Final Office Action for copending U.S. Appl. No. 17/101,206, dated May 26, 2023.
Final Office Action for copending U.S. Appl. No. 17/333,376, dated Apr. 5, 2023.
Final Office Action for copending U.S. Appl. No. 17/003,558, dated Jun. 26, 2023.
Co-pending U.S. Appl. No. 18/228,176, entitled "Compositions and Methods for Altering the Color of Hair," Inventors: Shahid Naseer et al., filed Jul. 31, 2023.
French Search Report and Written Opinion for counterpart French Application No. 2209666, dated May 9, 2023.
International Preliminary Report on Patentability in PCT/US2022/035765, mailed Dec. 14, 2023, 8 pages.
International Search Report and Written Opinion for counterpart Application No. PCT/US2023/029085, dated Oct. 19, 2023.
Non-Final Office Action for copending U.S. Appl. No. 17/853,663, dated Nov. 13, 2023.
Non-Final Office Action in U.S. Appl. No. 17/853,722, mailed Jan. 8, 2024, 9 pages.
Non-Final Office Action for copending U.S. Appl. No. 17/853,685, dated Aug. 10, 2023.
Final Office Action for copending U.S. Appl. No. 17/379,405, dated Sep. 18, 2023.
Non-Final Office Action for copending U.S. Appl. No. 17/003,558, dated Oct. 13, 2023.
Office Action in EP22747220.6, mailed Feb. 6, 2024, 3 pages.
Non-Final Office Action for copending U.S. Appl. No. 15/339,035, dated Apr. 22, 2024.
Non-Final Office Action for copending U.S. Appl. No. 17/101,206, dated Apr. 23, 2024.
Office Action in U.S. Appl. No. 17/003,558, mailed Mar. 25, 2024, 16 pages.
Non-Final Office Action for copending U.S. Appl. No. 17/379,405, dated Mar. 1, 2024.
Office Action in CN202080090709.9, mailed Feb. 27, 2024, 10 pages.
Non-Final Office Action for copending U.S. Appl. No. 17/877,999, dated Feb. 16, 2024.

* cited by examiner

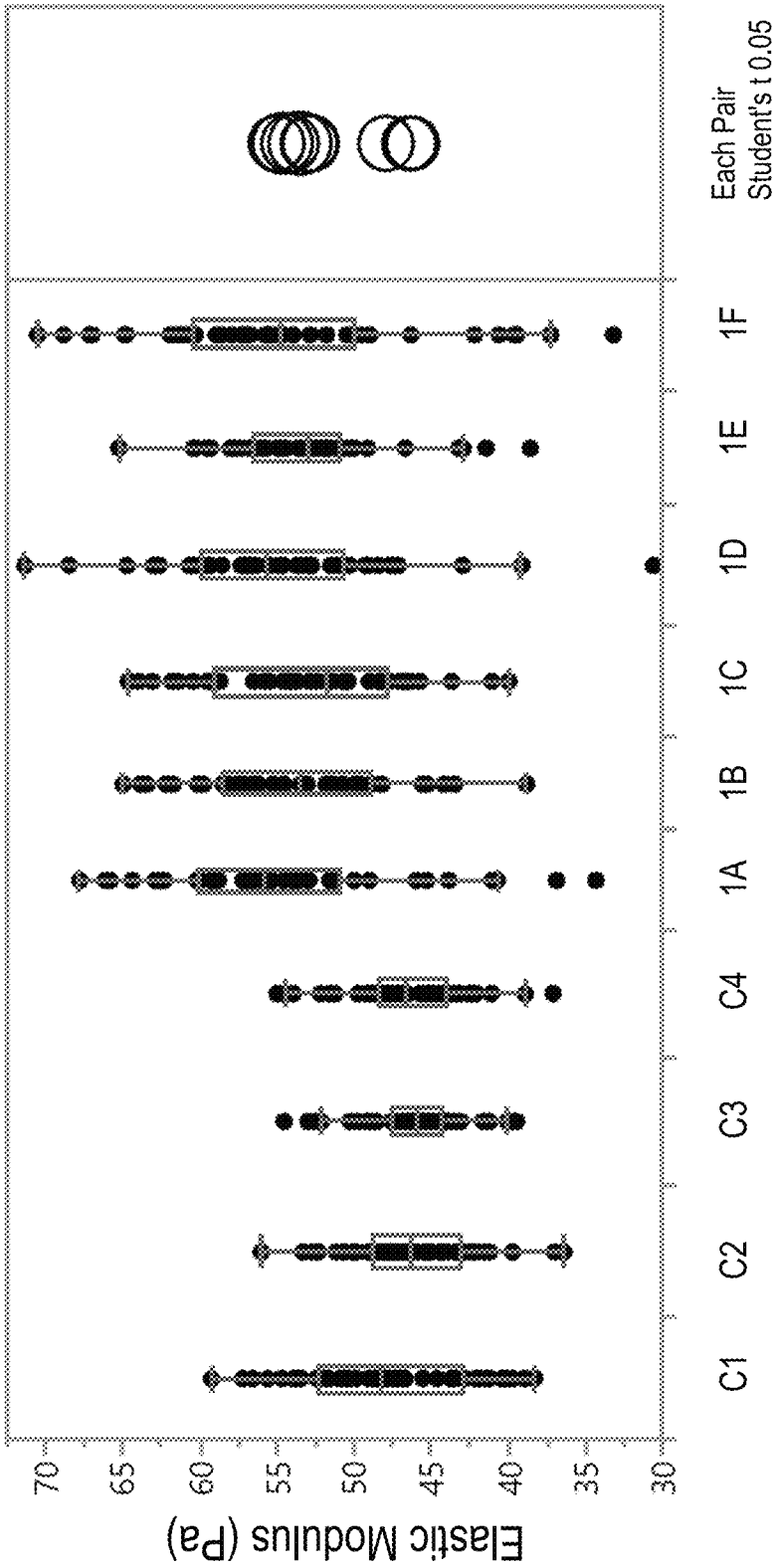

Elastic Modulus (Pa)
70
65
60
55
50
45
40
35
30
C1
C2
C3
C4
1A
1B
1C
1D
1E
1F
Each Pair
Student's t 0.05

FIG. 1

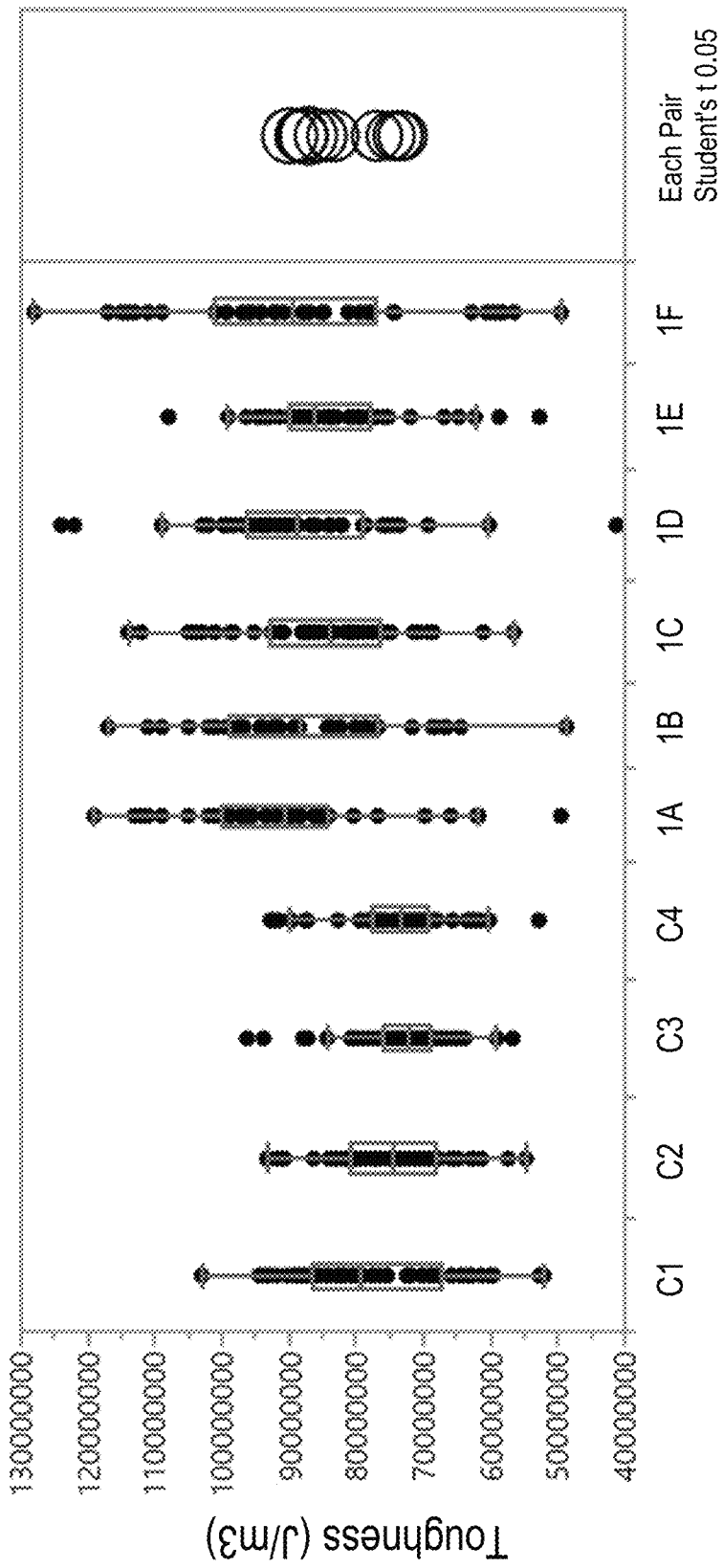

Toughness (J/m3)
130000000
120000000
110000000
100000000
90000000
80000000
70000000
60000000
50000000
40000000
C1
C2
C3
C4
1A
1B
1C
1D
1E
1F
Each Pair
Student's t 0.05

FIG. 2

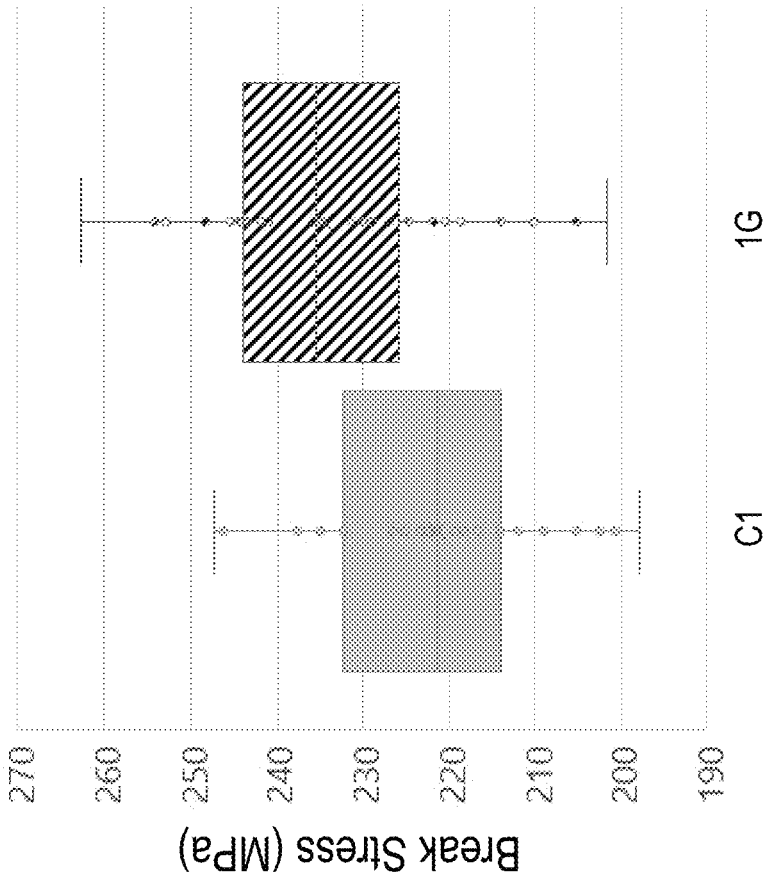


FIG. 3

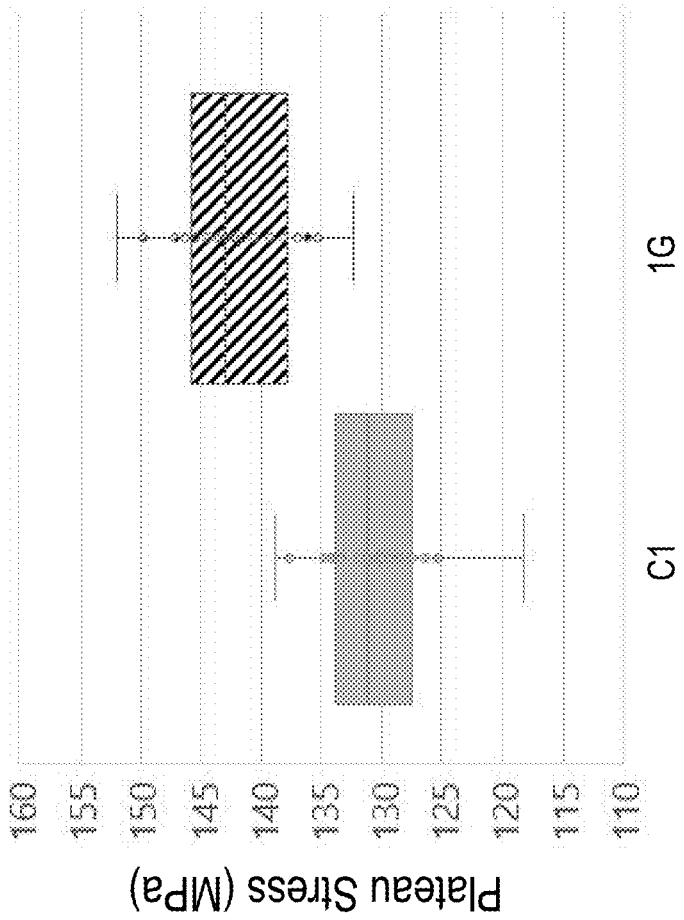

Plateau Stress (MPa)
160
155
150
145
140
135
130
125
120
115
110
C1
1G

FIG. 4

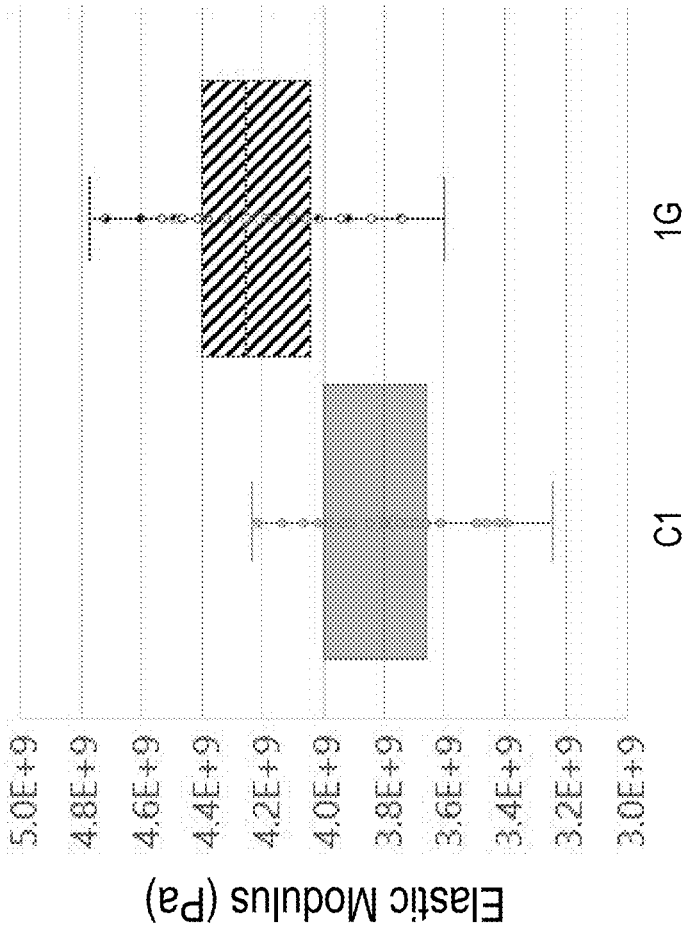

Elastic Modulus (Pa)
5.0E+9
4.8E+9
4.6E+9
4.4E+9
4.2E+9
4.0E+9
3.8E+9
3.6E+9
3.4E+9
3.2E+9
3.0E+9
C1
1G

FIG. 5

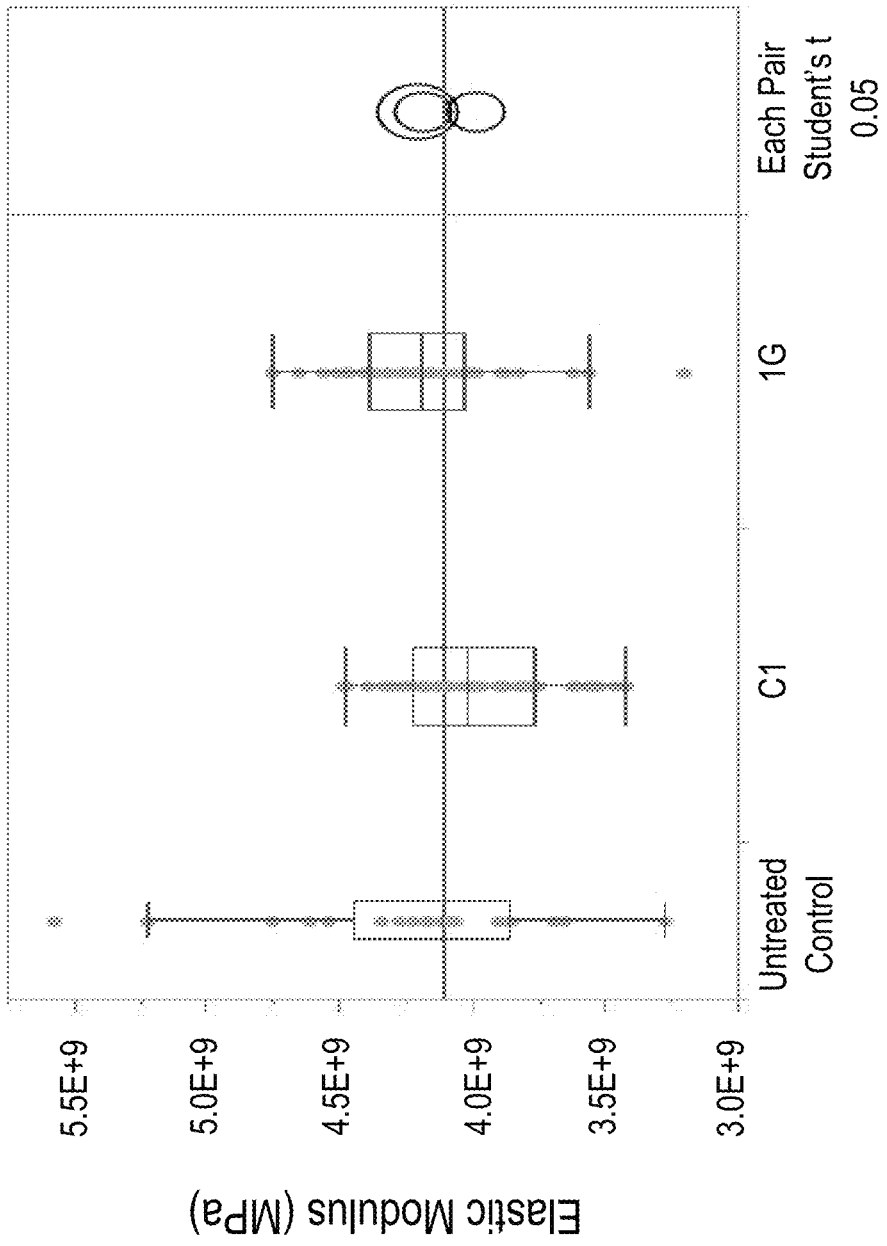

Elastic Modulus (MPa)
5.5E+9
5.0E+9
4.5E+9
4.0E+9
3.5E+9
3.0E+9
Untreated Control
C1
1G
Each Pair Student's t 0.05

FIG. 6

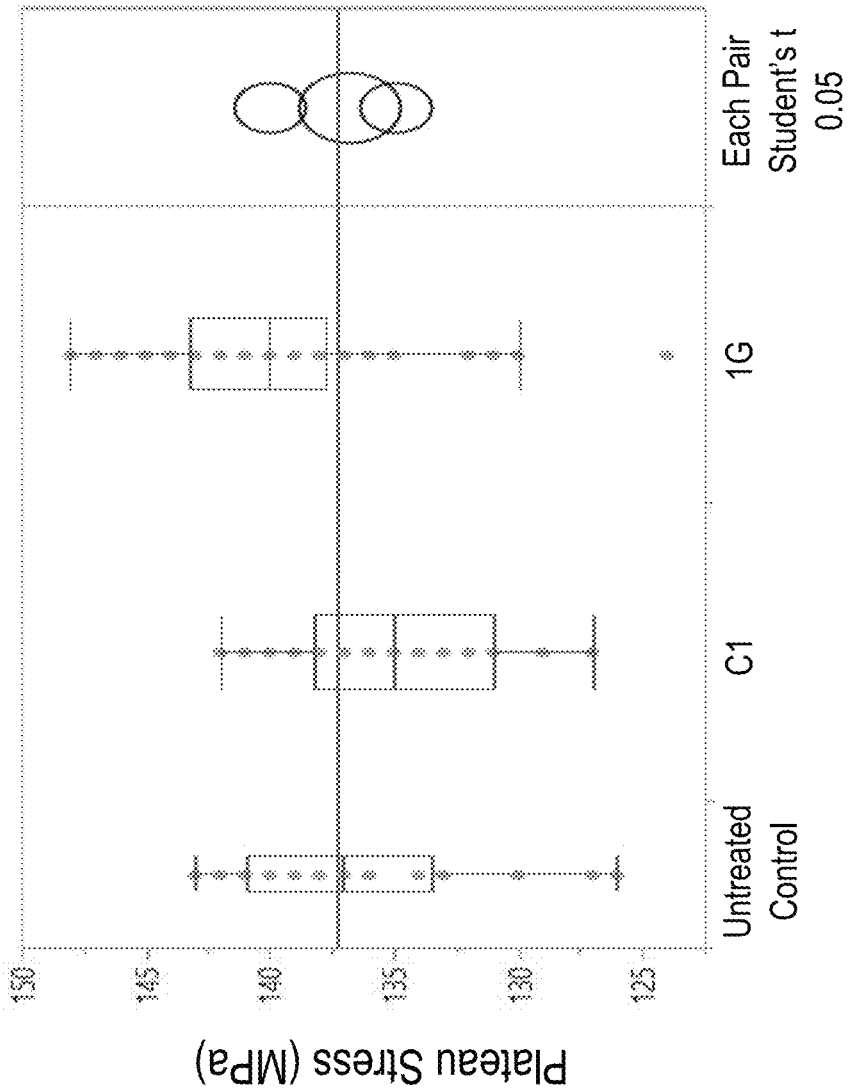

Plateau Stress (MPa)
150
145
140
135
130
125
Untreated Control
C1
1G
Each Pair
Student's t
0.05

FIG. 7

COMPOSITIONS AND METHODS FOR ALTERING THE COLOR OF HAIR

TECHNICAL FIELD

The present disclosure relates to compositions for altering the color of hair and methods of using the compositions for altering the color of the hair, while at the same time enhancing fiber integrity of the hair.

BACKGROUND

It is known that consumers desire to use cosmetic and care compositions that enhance the appearance of keratinous substrates such as hair, e.g., by changing the color, style, and/or shape of the hair, and/or by imparting various properties to hair, such as shine and conditioning. Many of the known compositions and processes for enhancing the appearance of the hair involve chemical treatment of the hair.

The process of altering the color of hair, for example, may involve lifting the color of the hair and/or depositing an artificial color onto the hair, which provides a different shade or color to the hair. The process of lifting the color of hair, also known as lightening, generally requires the use of compositions that comprise at least one oxidizing agent. Such oxidizing agents enter the hair shaft and react with melanin in the hair, thereby lightening the color of the hair. Additional agents, such as persulfate salts, may be added to accelerate the process.

Imparting a color change or color effect on hair can be done using permanent, demi-permanent, semi-permanent, or temporary hair coloring products. Conventional permanent hair coloring products are dye compositions comprising oxidation dye precursors, which are also known as primary intermediates or couplers. These oxidation dye precursors are colorless or weakly colored compounds which, when combined with oxidizing products, give rise to colored complexes by a process of oxidative condensation. The oxidizing products conventionally use peroxides such as hydrogen peroxide as oxidizing agents.

On the other hand, semi-permanent or temporary hair dyeing compositions typically use pigments, liposoluble dyes, or direct dyes chosen from acidic (anionic), basic (cationic), or neutral direct dyes which are deposited onto the hair fiber to impart color to the hair. Direct dyes are nonionic or ionic dyes and colored compounds capable of producing a more or less pronounced change of the natural color of the hair, resistant to shampoo-washing several times. These dyes may or may not be used in the presence of an oxidizing agent. In contrast with oxidation dye precursors, a direct dye is a relatively voluminous molecule that does not penetrate easily into the core of the fiber.

Hair lightening or color lifting compositions and hair dyeing compositions possess an alkalinity such that these compositions have a pH value of above 7, typically 9 and above, and may generally require the presence of ammonia or an ammonia gas-generating compound, or other alkalizing agents such as monoethanolamine (MEA) in amounts sufficient to make such compositions alkaline. These alkalizing agents cause the hair shaft to swell, helps open up the cuticle, thus allowing the small oxidative dye molecules to penetrate the cuticle and cortex before the oxidation condensation process is completed. The resulting larger-sized colored complexes from the oxidative reaction are then trapped inside the hair fiber, thereby permanently altering the color of the hair.

While such compositions can effectively alter the color of hair, these chemical treatments with the use of these compositions are harsh and can cause damage to the hair fibers and decrease the strength of the hair, and may also negatively affect the sensorial properties, such as the smoothness, shine, and feel, of the hair. Additionally, hair that is damaged during a bleaching and/or dyeing process may not take up color satisfactorily, resulting in unevenness or non-uniformity of color.

Thus, in order to reduce or avoid these drawbacks of products and processes for altering the color of the hair as described above, new and additional ingredients and novel combinations of ingredients that can help prevent, ameliorate, or reverse damage before, during, or after, or as a complement to, processes for altering the color of the hair are continuously sought. Nevertheless, the choice of ingredients or combinations of ingredients could pose difficulties insofar as they cannot be detrimental to other cosmetic attributes such as ease and uniformity of application, rheology or viscosity properties of the compositions, stability of the compositions, and/or color deposit and target shade formation, and they cannot result in more disadvantages such as increased damage or a less healthy look to the hair.

As such, there is a need for developing new and improved products that have desired rheology properties and can be used for effectively altering the color of hair, while at the same time, maintaining or improving the integrity of hair during coloring the hair and avoiding or minimizing damage to the hair. The present disclosure addresses these concerns and needs and relates to hair color-altering compositions incorporated with bonding actives to maintain and/or enhance the integrity of chemically treated hair and/or damaged hair during altering the color of hair.

SUMMARY

The present disclosure relates to compositions for altering the color of keratin fibers, particularly human hair, that comprise a synergistic combination of various components, including a bonding system comprising lactic acid and/or salts thereof, and one or more amino acids and/or salts thereof. The compositions are typically in the form of a cream, but can also be a serum, a gel, a gel cream, a lotion, a liquid, or the like. The disclosure also relates to methods of using the compositions for altering the color of hair.

It has been found that the bonding system disclosed herein, when incorporated into hair color-altering compositions, surprisingly and unexpectedly provides integrity property to keratin fibers even when subjected to color-altering processes. As such, in addition to lifting or coloring the hair, the compositions disclosed herein can strengthen the hair fiber, protect hair from damage, and/or reduce damage to the hair.

In various embodiments, the disclosure relates to a hair color-altering base composition comprising: (a) a bonding system comprising (i) at least one first bonding agent chosen from lactic acid and/or salts thereof, and (ii) at least one second bonding agent chosen from amino acids and/or salts thereof; (b) at least one fatty alcohol; (c) at least one fatty acid; (d) at least one alkyl polyglucoside; (e) at least one alkalizing agent; and (f) at least one solvent. The hair color-altering base composition may further comprise at least one color-altering agent chosen from oxidation bases, couplers, or combinations thereof. In some embodiments, the hair color-altering base composition may further comprise at least one vegetable oil, at least one thickening agent, and/or at least one polyol. The hair color-altering base

composition does not require cationic polymers, and as such, may be free or essentially free of cationic polymers. The pH of the hair color-altering base composition is typically greater than 7, such as from about 9 to about 11, or from about 10 to about 11.

In various embodiments, the total amount of lactic acid and/or salts thereof in the hair color-altering base composition may range from about 0.1% to about 5%, such as from about 0.1% to about 3.5%, from about 0.1% to about 2%, from about 0.2% to about 5%, from about 0.2% to about 3.5%, from about 0.2% to about 2%, from about 0.5% to about 5%, from about 0.5% to about 3.5%, from about 0.5% to about 2%, or from about to about 1.5% by weight, relative to the total weight of the hair color-altering base composition. The total amount of the second bonding agent(s) may range from about to about 12%, such as from about 0.1% to about 10%, from about 0.1% to about 8%, from about 0.5% to about 12%, from about 0.5% to about 10%, from about 0.5% to about 8%, from about 0.5% to about 7%, from about 0.5% to about 6%, from about 1% to about 12%, from about 1% to about 10%, from about 1% to about 8%, from about 1% to about 7%, or from about 1% to about 6% by weight, relative to the total weight of the composition. In some embodiments, the at least one second bonding agent is chosen from glycine, arginine, salts thereof, or mixtures thereof. In some embodiments, the hair color-altering base composition comprises arginine and/or salts thereof in an amount ranging from about 0.1% to about 7% by weight, relative to the total weight of the base composition. In some embodiments, the hair color-altering base composition comprises glycine and/or salts thereof in an amount ranging from about 0.1% to about 5% by weight, relative to the total weight of the base composition. In at least one embodiment, the hair color-altering base composition comprises lactic acid, arginine, and glycine in a weight ratio of about 1:3:1.5 (lactic acid:arginine:glycine). In some embodiments, the hair color-altering base composition comprises from about 0.5% to about 5% of lactic acid and from about 1% to 7% of arginine and/or from about 1% to 5% of glycine; wherein all amounts are by weight, relative to the total weight of the composition; and optionally wherein the base composition is free or essentially free of cationic polymers.

In further embodiments, the fatty alcohol(s) comprised in the hair color-altering base composition according to the present disclosure may be chosen from decyl alcohol, undecyl alcohol, dodecyl alcohol, myristyl alcohol, lauryl alcohol, cetyl alcohol, stearyl alcohol, cetearyl alcohol, isostearyl alcohol, isocetyl alcohol, behenyl alcohol, linalool, oleyl alcohol, isotridecyl alcohol, cis-4-t-butylcyclohexanol, and myricyl alcohol, or mixtures thereof. The total amount of fatty alcohol(s) may range from about 0.5% to about 25% by weight, relative to the total weight of the base composition. In yet further embodiments, the at least one fatty acid in the hair color-altering base composition according to the present disclosure may be chosen from myristic acid, lauric acid, palmitic acid, stearic acid, behenic acid, arichidonic acid, oleic acid, isostearic acid, sebacic acid, or a combination thereof. The total amount of fatty acid(s) may range from about 0.5% to about 15% by weight, relative to the total weight of the base composition, and

In some embodiments, the total amount of alkyl polyglucoside(s) in the hair color-altering base composition according to the present disclosure may range from about to about 5% by weight, relative to the total weight of the composition.

In some further embodiments, the at least one alkalizing agent may be chosen from alkanolamines, mineral alkalizing agents, or combination thereof. The total amount of alkalizing agent(s) may range from about 2% to about 12% by weight, relative to the total weight of the composition.

In some embodiments, the total amount of color-altering agents, when present, may range from about 0.0001% to about 10% by weight, relative to the total weight of the composition. In some embodiments, the amount of vegetable oil(s), when present, may range from about 0.5% to about 15% by weight, relative to the total weight of the base composition. In further embodiments, when thickening agent(s) are present, the total amount thereof may range from about 0.05% to about 5% by weight, relative to the total weigh of the base composition. The thickening agent(s) may be chosen from polysaccharides chosen from celluloses, starches, gums, or mixtures thereof.

In some embodiments, the at least one polyol, when present, may be chosen from ethylene glycol, propylene glycol, butylene glycol, hexylene glycol, pentylene glycol, diethylene glycol, dipropylene glycol, 1,3 propanediol, glycerin, polyethylene glycols, or combinations thereof. The total amount of polyol(s), when present, is at least 0.5% by weight, relative to the total weight of the base composition.

In still further exemplary and non-limiting embodiments, the disclosure relates to a hair color-altering base composition comprising: (a) a bonding system comprising (i) from about 0.1% to about 5% of lactic acid and/or salts thereof, and (ii) from about 0.1% to 7% of arginine and/or from about 0.1% to 5% of glycine; (b) at least one fatty alcohol; (c) at least one fatty acid; (d) from about 0.05% to about 5% of at least one alkyl polyglucoside; (e) at least one alkalizing agent; (f) at least one color-altering agent chosen from oxidative dyes, couplers, or combinations thereof; (g) at least one solvent comprising water; (h) optionally, at least one vegetable oil; (i) optionally, at least one thickening agent; and (j) optionally, at least one polyol, wherein all amounts are by weight, based on the total amount of the composition. The hair color-altering base composition does not require cationic polymers, and as such, may be free or essentially free of cationic polymers. The pH of the hair color-altering base composition is typically greater than 7, such as from about 9 to about 11, for example from about 10 to about 11.

In various embodiments, the hair color-altering base composition comprises: (a) a bonding system comprising (i) from about 0.1% to about 5%, such as from about 0.1% to about 3.5%, from about 0.1% to about 2%, from about 0.2% to about 5%, from about to about 3.5%, from about 0.2% to about 2%, from about 0.5% to about 5%, from about 0.5% to about 3.5%, from about 0.5% to about 2%, or from about 0.75% to about 1.5% of one or more first bonding agents chosen from lactic acid and/or salts thereof, and (ii) from about 0.1% to about 12%, such as from about 0.1% to about 10%, from about to about 8%, from about 0.5% to about 12%, from about 0.5% to about 10%, from about 0.5% to about 8%, from about 0.5% to about 7%, from about 0.5% to about 6%, from about 1% to about 12%, from about 1% to about 10%, from about 1% to about 8%, from about 1% to about 7%, or from about 1% to about 6% of one or more second bonding agents chosen from glycine, arginine, salts thereof, or mixtures thereof; (b) at least one fatty alcohol; (c) at least one fatty acid; (d) from about 0.05% to about 5%, preferably from about 0.05% to about 3%, more preferably from about 0.1% to about 3%, more preferably still from about 0.1% to about 1.5%, most preferably from about 0.1% to about 1% of at least one alkyl polyglucoside; (e) at least one alkalizing agent chosen from organic alkalizing agents, mineral alkalizing agents, and mixtures thereof, preferably

including monoethanolamine and ammonia or ammonium hydroxide; (f) optionally at least one hair color-altering agent chosen from oxidative dyes, couplers, or combinations thereof; (g) at least one solvent comprising water; (h) optionally, at least one vegetable oil; (i) optionally, at least one thickening agent; and (j) optionally, at least one polyol; wherein all amounts are by weight, based on the total weight of the base composition; wherein the hair color-altering base composition comprises lactic acid, arginine, and glycine in a weight ratio of about 1:3:1.5 (lactic acid:arginine:glycine); wherein the base composition is free or essentially free of cationic polymers; and wherein the base composition has a pH greater than 7, preferably ranging from about 9 to about 11, more preferably ranging from about to about 11.

The hair color-altering base compositions disclosed herein are generally stable and can be stored at room temperature for at least 24 months. Any of the base compositions disclosed herein may be mixed, at the time or near the time of us, with a developer composition comprising at least one oxidizing agent to prepare a mixture, i.e., a hair color-altering composition, that can be applied on the hair for altering the color of the hair, while at the same time, maintaining or improving the integrity of the chemically treated hair and/or damaged hair.

The hair color-altering base compositions according to the disclosure are mixed with a developer composition comprising one or more oxidizing agents, at or near the time of use, to provide hair color-altering compositions according to the disclosure.

In yet further exemplary and non-limiting various embodiments, the disclosure relates to a method for altering the color of hair, including lifting the color or providing colors to hair, while imparting strength to the hair and minimizing or reducing damage to the hair by using the compositions disclosed herein. The method generally comprises applying a hair color-altering composition according to the present disclosure to the hair, and rinsing the composition off the hair after the composition is allowed to remain on the hair for a desired period of time ("leave-in time"), such as from about 1 minute to about minutes. The hair color-altering composition is a mixture typically obtained at or near the time of use by mixing any of the hair color-altering base compositions disclosed herein with a developer composition comprising at least one oxidizing agent. The method thus may further comprise mixing any of the hair color-altering base compositions disclosed herein with the developer composition at or near the time of use to obtain the hair color-altering composition. The hair color-altering composition has a pH of greater than 7, such as from about 9 to about 11, or from about 9.5 to about 10.5. The hair may optionally be pre-bleached before the application of the color-altering compositions disclosed herein.

BRIEF DESCRIPTION OF THE FIGURES

The accompanying drawings, which are incorporated herein and constitute part of this specification, illustrate exemplary embodiments of the disclosure, and, together with the general description given above and the description provided herein, serve to explain features of the disclosure.

FIG. **1** is a graph illustrating the elastic modulus of hair treated with compositions 1A-1F according to the present disclosure, and hair treated with comparative compositions.

FIG. **2** is a graph illustrating the tensile toughness of hair treated with compositions 1A-1F according to the present disclosure, and hair treated with comparative compositions.

FIG. **3** is a graph illustrating the break stress of hair treated with composition 1G according to the present disclosure, and hair treated with a comparative composition.

FIG. **4** is a graph illustrating the plateau stress of hair treated with composition 1G according to the present disclosure, and hair treated with a comparative composition.

FIG. **5** is a graph illustrating the elastic modulus (Young's modulus) of hair treated with composition 1G according to the present disclosure, and hair treated with a comparative composition.

FIG. **6** is a graph illustrating the elastic modulus (Young's modulus) of hair treated with composition 1G according to the present disclosure, compared with untreated hair and hair similarly treated with a comparative composition.

FIG. **7** is a graph illustrating the plateau stress of hair treated with composition 1G according to the present disclosure, compared with untreated hair and hair similarly treated with a comparative composition.

It is to be understood that the foregoing and following descriptions are exemplary and explanatory only and are not intended to be restrictive of any subject matter claimed.

DETAILED DESCRIPTION

The present disclosure relates to compositions for altering the color of hair, as well as kits containing the compositions and methods of using the compositions. A unique feature of the compositions and methods according to the present disclosure is a bonding system incorporated in the compositions for altering the color of the hair, where the bonding system comprises a synergistic combination of lactic acid and/or salts thereof and at least one amino acid and/or salt thereof. It has been surprisingly found that the bonding system can significantly improve hair fiber integrity and/or minimize hair damage caused by chemical treatment.

I. Compositions

In various embodiments, the compositions according to the disclosure are compositions for altering the color of hair. Such hair color-altering compositions can be, in various embodiments, for demi-permanently or permanently altering the hair color. In each case, the compositions comprise a synergistic combination of (i) lactic acid and/or salts thereof; and (ii) at least one amino acid. The compositions may be a hair color-altering base composition that can be mixed with a developer composition at or near the time of use, or may be a hair color-altering composition that is the mixture of a hair color-altering base composition and a developer composition comprising at least one oxidizing agent.

Hair Color-Altering Base Compositions

In various embodiments, a hair color-altering base composition (referred to interchangeably as "base compositions") according to the present disclosure comprises: (a) a bonding system comprising (i) a first bonding agent chosen from lactic acid and/or salts thereof, and (ii) a second bonding agent chosen from amino acids and/or salts thereof; (b) at least one fatty alcohol; (c) at least one fatty acid; (d) at least one alkyl polyglucoside; (e) at least one alkalizing agent; and (f) at least one solvent. In some embodiments, the hair color-altering base composition can further comprise one or more hair color-altering agents chosen from oxidation bases, couplers, or combinations thereof. In some embodiments, the hair color-altering base composition may further comprise at least one vegetable oil, at least one thickening agent, and/or at least one polyol. The hair color-altering base

composition does not require cationic polymers and may be free or essentially free of cationic polymers. The pH of the hair color-altering base composition is typically greater than 7.

Bonding System

Hair color-altering base compositions according to the disclosure comprise a bonding system formed by a synergistic combination of: (i) at least one first bonding agent chosen from lactic acid and/or salts thereof; and (ii) at least one second bonding agent chosen from amino acid and/or salts thereof. In some embodiments, amino acids such as glycine, arginine, salts thereof, or combinations thereof may be chosen. For example, the second bonding agent may comprise, consist essentially of, or consist of glycine, arginine, salts thereof, or combinations thereof.

In various exemplary embodiments, the total amount of first bonding agent(s) in the hair color-altering base compositions may range from about 0.1% to about 5%, including all subranges therebetween, such as from about 0.1% to about 4%, from about to about 3%, from about 0.1% to about 2%, from about 0.1% to about 1.5%, from about 0.1% to about 1%, from about 0.2% to about 5%, from about 0.2% to about 4%, from about 0.2% to about 3%, from about 0.2% to about 2%, from about 0.2% to about 1.5%, from about 0.2% to about 1%, from about 0.5% to about 5%, from about 0.5% to about 4%, from about 0.5% to about 3%, from about 0.5% to about 2%, from about 0.5% to about 1.5%, from about 0.5% to about 1%, from about 1% to about 5%, from about 1% to about 4%, from about 1% to about 3%, from about 1% to about 2%, from about 1% to about 1.5%, from about 1.5% to about 5%, from about 1.5% to about 4%, from about 1.5% to about 3%, or from about 1.5% to about 2% by weight, relative to the total weight of the base composition. In some embodiments, the total amount of lactic acid and/or salts thereof ranges from about 0.5% to about 2% by weight, for example from about to about 1.5% by weight, relative to the total weight of the base composition. In some embodiments, the total amount of lactic acid and/or salts thereof is about 1%), about 1.5%, about 2%, about 2.5%, about 3%, or about 3.5% by weight, relative to the total weight of the base composition.

In some embodiments, the amount of an individual second bonding agent in the base compositions may range from about 0.1% to about 10%, including all subranges therebetween, such as from about 0.1% to about 9%, from about 0.1% to about 8%, from about 0.1% to about 7%, from about 0.1% to about 6%, from about 0.1% to about 5%, from about 0.1% to about 4%, from about 0.1% to about 3%, from about 0.1% to about 2%, from about 0.1% to about 1%, from about 0.2% to about 9%, from about 0.2% to about 8%, from about 0.2% to about 7%, from about 0.2% to about 6%, from about 0.2% to about 5%, from about 0.2% to about 4%, from about 0.2% to about 3%, from about to about 2%, from about 0.2% to about 1%, from about 0.5% to about 9%, from about 0.5% to about 8%, from about 0.5% to about 7%, from about 0.5% to about 6%, from about 0.5% to about 5%, from about 0.5% to about 4%, from about 0.5% to about 3%, from about 0.5% to about 2%, from about 1% to about 9%, from about 1% to about 8%, from about 1% to about 7%, from about 1% to about 6%, from about 1% to about 5%, from about 1% to about 4%, from about 1% to about 3%, from about 1% to about 2% by weight, relative to the total weight of the base composition. In some embodiments, the amount of an individual second bonding agent in the base compositions may be about about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5%, about 5.5%, about 6%, about 6.5%, about 7%, about 7.5%, about 8%, about 8.5%, about 9%, about 9.5%, or about 10% by weight, relative to the total weight of the base composition.

In various exemplary embodiments, the total amount of the second bonding agent(s) in the base compositions, such as arginine and/or glycine, ranges from about to about 12%, including all subranges therebetween, such as from about 0.1% to about 11%, from about 0.1% to about 10%, from about 0.1% to about 9%, from about to about 8%, from about 0.1% to about 7%, from about 0.1% to about 6%, from about 0.1% to about 5%, from about 0.1% to about 4%, from about 0.1% to about 3%, from about 0.1% to about 2%, from about 0.5% to about 12%, from about 0.5% to about 11%, from about 0.5% to about 10%, from about 0.5% to about 9%, from about 0.5% to about 8%, from about 0.5% to about 7%, from about 0.5% to about 6%, from about 0.5% to about 5%, from about 0.5% to about 4%, from about 0.5% to about 3%, from about to about 2%, from about 1% to about 12%, from about 1% to about 11%, from about 1% to about 10%, from about 1% to about 9%, from about 1% to about 8%, from about 1% to about 7%, from about 1% to about 6%, from about 1% to about 5%, from about 1% to about 4.5%, from about 1% to about 4%, from about 1% to about 3% by weight, relative to the total weight of the hair color-altering base composition.

In various embodiments, the second bonding agent comprises, consists essentially of, or consist of glycine, arginine, salts thereof, or mixtures thereof.

In exemplary embodiments, the hair color-altering base composition comprises glycine in an amount ranging from about 0.1% to about 5%, including all subranges therebetween, such as from about 0.1% to about 4.5%, from about 0.1% to about 4%, from about 0.1% to about 3.5%, from about 0.1% to about 3%, from about 0.1% to about 2.5%, from about 0.1% to about 2%, from about 0.1% to about 1.5%, from about 0.1% to about 1%, from about 0.2% to about 5%, from about 0.2% to about 4.5%, from about to about 4%, from about 0.2% to about 3.5%, from about 0.2% to about 3%, from about 0.2% to about 2.5%, from about 0.2% to about 2%, from about 0.2% to about 1.5%, from about 0.2% to about 1%, from about 0.5% to about 5%, from about 0.5% to about 4.5%, from about 0.5% to about 4%, from about 0.5% to about 3.5%, from about 0.5% to about 3%, from about 0.5% to about 2.5%, from about 0.5% to about 2%, from about to about 1.5%, from about 0.5% to about 1%, from about 0.75% to about 5%, from about 0.75% to about 4.5%, from about 0.75% to about 4%, from about 0.75% to about 3.5%, from about 0.75% to about 3%, from about 0.75% to about 2.5%, from about 0.75% to about 2%, from about 0.75% to about 1.5%, from about 0.75% to about 1%, from about 1% to about 5%, from about 1% to about 4.5%, from about 1% to about 4%, from about 1% to about 3.5%, from about 1% to about 3%, from about 1% to about 2.5%, from about 1% to about 2%, or from about 1% to about 1.5% by weight, relative to the total weight of the base composition. In certain embodiments, glycine is included in the base composition in an amount ranging from about 0.5% to about 3.5%, for example from about to about 3.25%, such as from about 1% to about 3% by weight, relative to the total weight of the base composition.

In exemplary embodiments, the hair color-altering base composition comprises arginine and/or salts thereof in an amount ranging from about 0.1% to about 7%, including all subranges therebetween, such as from about 0.1% to about 6.5%, from about 0.1% to about 6%, from about 0.1% to about 5.5%, from about 0.1% to about 5%, from about to about 4.5%, from about 0.1% to about 4%, from about 0.1%

to about 3.5%, from about 0.1% to about 3%, from about 0.1% to about 2.5%, from about 0.1% to about 2%, from about 0.1% to about 1.5%, from about 0.1% to about 1%, from about 0.2% to about 7%, from about 0.2% to about 6.5%, from about 0.2% to about 6%, from about 0.2% to about 5.5%, from about 0.2% to about 5%, from about 0.2% to about 4.5%, from about to about 4%, from about 0.2% to about 3.5%, from about 0.2% to about 3%, from about 0.2% to about 2.5%, from about 0.2% to about 2%, from about 0.2% to about 1.5%, from about 0.2% to about 1%, from about 0.5% to about 7%, from about 0.5% to about 6.5%, from about 0.5% to about 6%, from about 0.5% to about 5.5%, from about 0.5% to about 5%, from about 0.5% to about 4.5%, from about 0.5% to about 4%, from about to about 3.5%, from about 0.5% to about 3%, from about 0.5% to about 2.5%, from about 0.5% to about 2%, from about 0.5% to about 1.5%, from about 0.5% to about 1%, from about 0.75% to about 7%, from about 0.75% to about 6.5%, from about 0.75% to about 6%, from about 0.75% to about 5.5%, from about 0.75% to about 5%, from about to about 4.5%, from about 0.75% to about 4%, from about 0.75% to about 3.5%, from about 0.75% to about 3%, from about 0.75% to about 2.5%, from about 0.75% to about 2%, from about 0.75% to about 1.5%, from about 0.75% to about 1%, from about 1% to about 7%, from about 1% to about 6.5%, from about 1% to about 6%, from about 1% to about 5.5%, from about 1% to about 5%, from about 1% to about 4.5%, from about 1% to about 4%, from about 1% to about 3.5%, from about 1% to about 3%, from about 1% to about 2.5%, from about 1% to about 2%, or from about 1% to about 1.5% by weight, relative to the total weight of the base composition. In certain embodiments, arginine is included in the base composition in an amount ranging from about 0.1% to about 5.5%, for example from about 0.25% to about 5.25% by weight, such as from about 0.5% to about 5% by weight, relative to the total weight of the base composition.

In one embodiment, the base composition comprises lactic acid in an amount ranging from about 0.5% to about 5% by weight, arginine in an amount ranging from about 1% to about 7% by weight and/or glycine from about 1% to about 5% by weight, where all amounts are by weight, based on the total weight of the base composition.

In some embodiments, the base composition comprises lactic acid and/or a salt thereof, and one or more amino acids and/or a salt thereof, where the amounts of lactic acid/salts and the amino acid(s)/salts may be chosen such that the amount of lactic acid/salts is less than or equal to the amount of an individual amino acid/salt. In some further embodiments, the base composition comprises lactic acid and/or a salt thereof, and one or more amino acids and/or a salt thereof, where the amounts of lactic acid/salts and the amino acid(s)/salts may be chosen such that the amount of lactic acid/salts is less than or equal to the total amount of amino acids/salts. In some still further embodiments, the base composition comprises lactic acid and/or a salt thereof, and one or more amino acids and/or a salt thereof, where the amounts of lactic acid/salts and the amino acid(s)/salts may be chosen such that the amount of lactic acid/salts is greater than or equal to the amount of an individual amino acid/salt. In some other embodiments, the base composition comprises lactic acid and/or a salt thereof, and one or more amino acids and/or a salt thereof, where the amounts of lactic acid/salts and the amino acid(s)/salts may be chosen such that the amount of lactic acid/salts is greater than or equal to the total amount of amino acids/salts. For example, the weight ratio of lactic acid:amino acid(s) (either individual or total) may range from about 1:5 to 5:1, for example from about 1:4 to 4:1, from about 1:3 to 3:1, from about 1:2 to 2:1, or from about 1:1.5 to 1.5:1, or may be about 1:1. In one exemplary embodiment, the base composition comprises lactic acid, arginine, and glycine in a weight ratio of about 1:3:1.5 (lactic acid:arginine:glycine).

Fatty Alcohols

Hair color-altering base compositions according to the disclosure comprise at least one fatty alcohol. Suitable fatty alcohols include those having a fatty group with a carbon chain of C5 or greater, such as, for example, from 8 to 50 carbon atoms, 8 to 40 carbon atoms, 8 to 30 carbon atoms, 8 to 22 carbon atoms, 12 to 22 carbon atoms, or 12 to 18 carbon atoms, including all ranges and subranges therebetween. In some instances, the fatty group of the fatty alcohols has a carbon chain of 10 to 20 carbon atoms or 10 to 18 carbon atoms. The fatty alcohols may be chosen from polyethylene glycol ethers, such as those having a fatty alcohol group with a carbon chain of 12 to 16 or 12 to 14 carbon atoms.

In some embodiments, the fatty alcohol portion is optionally hydrogenated (for example, stearyl, lauryl, cetyl, cetearyl); however, the fatty alcohol may contain one or more double bonds (for example, oleyl). Non-limiting examples of fatty alcohols include decyl alcohol, undecyl alcohol, dodecyl alcohol, myristyl alcohol, lauryl alcohol, cetyl alcohol, stearyl alcohol, cetearyl alcohol (cetyl alcohol and stearyl alcohol), isostearyl alcohol, isocetyl alcohol, behenyl alcohol, linalool, oleyl alcohol, cis-4-t-butylcyclohexanol, isotridecyl alcohol, myricyl alcohol, or mixtures thereof. In some cases, the fatty alcohols may be chosen from myristyl alcohol, lauryl alcohol, cetyl alcohol, stearyl alcohol, cetearyl alcohol, isostearyl alcohol, oleyl alcohol, isotridecyl alcohol, or mixtures thereof.

The fatty alcohol may be saturated or unsaturated. Exemplary saturated liquid fatty alcohols may be branched and optionally contain in their structure at least one aromatic or non-aromatic ring. In some instances, however, the fatty alcohols are acyclic. Non-limiting examples of liquid saturated fatty alcohols include octyldodecanol, isostearyl alcohol, and 2-hexyldecanol.

Exemplary unsaturated liquid fatty alcohol may include in their structure at least one double or triple bond. For example, the fatty alcohols may include several double bonds (such as 2 or 3 double bonds), which may be conjugated or non-conjugated. The unsaturated fatty alcohols can be linear or branched and may be acyclic or include in their structure at least one aromatic or non-aromatic ring. Liquid unsaturated fatty alcohols may include or be chosen from oleyl alcohol, linoleyl alcohol, linolenyl alcohol and undecylenyl alcohol.

The fatty alcohols may be alkoxylated fatty alcohols. As used herein, "alkoxylated fatty alcohol" refers to any fatty alcohol with a carbon chain of C5 or greater, as defined above, further comprising at least one alkoxy group. For example, the at least one alkoxylated fatty alcohol may have a carbon chain of C8 or greater, C10 or greater, and C12 or greater. Further, for example, the at least one alkoxylated fatty alcohol may be chosen from alkoxylated polymers (including co-, ter- and homo-polymers) derived from alcohols such as glycerol (e.g. polyglyceryl derived from four glycerol molecules). The at least one alkoxy group of the at least one alkoxylated fatty alcohol may, for example, be derived from an alkoxylation reaction carried out with alkylene oxide. Non-limiting examples of at least one alkoxylated fatty alcohol include any fatty alcohol comprising at least one polyethylene glycol ether and any fatty alcohol comprising at least one polypropylene glycol ether.

Non-limiting examples of the at least one alkoxylated fatty alcohol include ceteareth-2, ceteareth-3, ceteareth-4, ceteareth-5, ceteareth-6, ceteareth-7, ceteareth-8, ceteareth-9, ceteareth-10, ceteareth-11, ceteareth-12, ceteareth-13, ceteareth-14, ceteareth-15, ceteareth-16, ceteareth-17, ceteareth-18, ceteareth-20, ceteareth-22, ceteareth-23, ceteareth-24, ceteareth-25, ceteareth-27, ceteareth-28, ceteareth-29, ceteareth-30, cetearel:h-33, ceteareth-34, ceteareth-40, ceteareth-50, ceteareth-55, ceteareth-60, ceteareth-80, ceteareth-100, laureth-1, laureth-2, laureth-3, laureth-4, laureth-5, laureth-6, laureth-7, laureth-8, laureth-9, laureth-10, laureth-11, laureth-12, laureth-13, laureth-14, laureth-15, lauretih-16, laureth-20, laureth-23, laureth-25, laureth-30, laureth-40, deceth-3, deceth-5, oleth-5, oleth-30, steareth-2, steareth-10, steareth-20, steareth-100, cetyl-steareth-12, ceteareth-5, ceteareth-5, polyglyceryl 4-lauryl ether, polyglyceryl 4-oleyl ether, polyglyceryl 2-oleyl ether, polyglyceryl 2-cetyl ether, polyglyceryl 6-cetyl ether, polyglyceryl 6-oleylcetyl ether, polyglyceryl 6-octadecyl ether, C9-C11 pareth-3, C9-C11 pareth-6, C11-C15 pareth-3, C11-C15 pareth-5, C11-C15 pareth-12, C11-C15 pareth-20, C12-C15 pareth-9, C12-C15 pareth-12, and C22-C24 pareth-33.

The total amount of fatty alcohol(s) can vary, but typically ranges from about to about 25%, including all subranges therebetween, such as from about 0.5% to about 22%, from about 0.5% to about 20%, from about 0.5% to about 18%, from about to about 15%, from about 0.5% to about 10%, from about 0.5% to about 8%, from about 1% to about 25%, from about 1% to about 22%, from about 1% to about 20%, from about 1% to about 18%, from about 1% to about 15%, from about 1% to about 10%, from about 2% to about 25%, from about 2% to about 22%, from about 2% to about 20%, from about 2% to about 18%, from about 2% to about 15%, from about 2% to about 10%, from about 3% to about 25%, from about 3% to about 22%, from about 3% to about 20%, from about 3% to about 18%, from about 3% to about 15%, from about 3% to about 10%, from about 5% to about 25%, from about 5% to about 22%, from about 5% to about 20%, from about 5% to about 18%, from about 5% to about 15%, from about 5% to about 10%, from about 10% to about 25%, from about 10% to about 22%, from about 10% to about 20%, from about 10% to about 18%, from about 10% to about 15%, from about 15% to about 25%, from about 15% to about 22%, from about 15% to about 20% by weight, relative to the total weight of the base composition.

In some embodiments, a hair color-altering base composition according to the present disclosure comprises at least two fatty alcohols, such as cetearyl alcohol and oleyl alcohol, wherein the total amount of the at least two fatty alcohols ranges from about 1% to about 25%, such as from about 10% to about 25% or from about 15% to about 20% by weight, relative to the total weight of the base composition.

Fatty Acids

Hair color-altering base compositions according to the disclosure comprise at least one fatty acid. Suitable fatty acids that can be included in the base compositions may have about 10 to about 30 carbon atoms, from about 12 to about 22 carbon atoms, or from about 16 to about 22 carbon atoms. These fatty acids can be straight or branched chain acids and can be saturated or unsaturated. Also included are diacids, triacids, and other multiple acids which meet the carbon number requirement herein. Further included herein are salts of these fatty acids. Nonlimiting examples of fatty acids include myristic acid, lauric acid, palmitic acid, stearic acid, behenic acid, arichidonic acid, oleic acid, isostearic acid, sebacic acid, or mixtures thereof. In some embodiments, the fatty acids may comprise myristic acid, palmitic acid, stearic acid, or mixtures thereof.

The amount of fatty acid(s) typically ranges from about 0.5% to about 15%, including all subranges therebetween, such as from about 0.5% to about 12%, from about 0.5% to about 10%, from about 0.5% to about 8%, from about 0.5% to about 6%, from about 0.5% to about 4%, from about 0.5% to about 3%, from about 1% to about 15%, from about 1% to about 12%, from about 1% to about 10%, from about 1% to about 8%, from about 1% to about 6%, from about 1% to about 4%, from about 2% to about 15%, from about 2% to about 12%, from about 2% to about 10%, from about 2% to about 8%, from about 2% to about 6%, from about 2% to about 4% by weight, relative to the total weight of the hair color-altering base composition.

In some embodiments, a hair color-altering base composition according to the present disclosure comprises oleic acid present in an amount ranging from about 2% to about 4% by weight, relative to the total weight of the base composition.

Vegetable Oils

In various embodiments, hair color-altering base compositions according to the disclosure may further comprise one or more vegetable oils. As used herein, the term "vegetable oils" refers to oils derived from a plant, for example, oils from seeds or fruits.

In some embodiments, suitable vegetable oils are chosen from hydrocarbon-based oils of plant origin and/or vegetable origin. Non-limiting examples of plant based or vegetable based oils include acai oil, almond oil, aloe vera oil, andiroba oil, annatto oil, avocado oil, babassu oil, borage oil, brazil nut oil, buriti oil, camelina oil, coffee oil, copaiba oil, emu oil, passion fruit oil, almond oil, castor oil, coconut oil, grapeseed oil, jojoba oil, macadamia nut oil, rose hip oil, ajwain oil, angelic root oil, anise oil, aragan oil, asafetida, balsam oil, basil oil, bay oil, bergamot oil, black pepper essential oil, buchu oil, birch oil, camphor, *cannabis* oil, caraway oil, cardamom seed oil, carrot seed oil, chamomile oil, calamus root oil, cinnamon oil, citronella oil, clary sage, clove leaf oil, coffee, coriander, costmary oil, cranberry seed oil, cubeb, cumin oil, cypress, cypriol, curry leaf, davana oil, dill oil, elecampane, *eucalyptus* oil, fennel seed oil, fenugreek oil, fir, frankincense oil, galangal, geranium oil, ginger oil, goldenrod, grapefruit oil, grapeseed oil, henna oil, helichrysum, horseradish oil, hyssop, Idaho tansy, jasmine oil, juniper berry oil, lavender oil, lemon oil, lemongrass, marjoram, *melaleuca*, lemon balm oil, mountain savory, mugwort oil, mustard oil, myrrh oil, myrtle, neem tree oil, neroli, nutmeg, orange oil, oregano oil, orris oil, palo santo, parsley oil, patchouli oil, *perilla* oil, pennyroyal oil, peppermint oil, petitgrain, pine oil, plum oil, ravensara, red cedar, roman chamomile, rose oil, rosehip oil, rosemary oil, rosewood oil, sandalwood oil, *sassafras* oil, savory oil, schisandra oil, spikenard, spruce, star anise oil, tangerine, tarragon oil, tea tree oil, thyme oil, *tsuga* oil, turmeric, valerian, vetiver oil, western red cedar, wintergreen, yarrow oil, ylang-ylang, and zedoary oil.

In some cases, the vegetable oils may be glyceride triesters, which are generally triesters of fatty acids and of glycerol, the fatty acids of which can have varied chain lengths from C4 to C24, it being possible for these chains to be saturated or unsaturated and linear or branched; these oils are in particular wheat germ oil, sunflower oil, grape seed oil, sesame oil, corn oil, apricot oil, castor oil, shea oil, avocado oil, olive oil, soybean oil, sweet almond oil, palm oil, rapeseed oil, cottonseed oil, hazelnut oil, macadamia oil,

jojoba oil, alfalfa oil, poppy oil, pumpkin seed oil, marrow oil, blackcurrant oil, evening primrose oil, millet oil, barley oil, *quinoa* oil, rye oil, safflower oil, candlenut oil, passion-flower oil, and musk rose oil.

In some instances, the vegetable oils may be essential oils. For example, the vegetable oil comprises may be chosen from sunflower oil, sesame oil, peppermint oil, macadamia nut oil, tea tree oil, evening primrose oil, sage oil, rosemary oil, coriander oil, thyme oil, pimento berries oil, rose oil, anise oil, balsam oil, bergamot oil, rosewood oil, cedar oil, chamomile oil, sage oil, clary sage oil, clove oil, cypress oil, *eucalyptus* oil, fennel oil, sea fennel oil, frankincense oil, geranium oil, ginger oil, grapefruit oil, jasmine oil, juniper oil, lavender oil, lemon oil, lemongrass oil, lime oil, mandarin oil, marjoram oil, myrrh oil, neroli oil, orange oil, patchouli oil, pepper oil, black pepper oil, petitgrain oil, pine oil, rose otto oil, rosemary oil, sandalwood oil, spearmint oil, spikenard oil, vetiver oil, wintergreen oil, ylang, or a mixture thereof.

In some embodiments, a hair color-altering base composition according to the present disclosure includes at least one oil chosen from saturated or unsaturated plant oils having less than 16 carbon atoms, for example, coconut oil, *Ricinus communis* (castor) seed oil, *Butyrospermum parkii* (shea) butter, palmitic acid, jojoba oil, or a mixture thereof.

The total amount of vegetable oils, if they are present, typically ranges from about to about 10%, including all subranges therebetween, such as from about 0.5% to about 9%, from about 0.5% to about 8%, from about 0.5% to about 7%, from about 0.5% to about 6%, from about 0.5% to about 5%, from about 0.5% to about 4%, from about 1% to about 10%, from about 1% to about 9%, from about 1% to about 8%, from about 1% to about 7%, from about 1% to about 6%, from about 1% to about 5% by weight, based on the total weight of the base composition. In certain embodiments, the total amount of vegetable oil(s) is about 3%, about 4%, about 4.5%, about 5%, about 5.5%, about 6%, or about 7% by weight, relative to the total weight of the base composition. In an embodiment, a hair color-altering base composition disclosed herein comprises *Butyrospermum parkii* (shea) butter in an amount ranging from about 2% to about 10%, for example about 2% to about 8%, about 2% to about 6%, about 3% to about 5%, or about 4% by weight, relative to the total weight of the base composition.

In some embodiments, hair color-altering base compositions according to the disclosure may include synthetic oils and/or oils other than vegetable oils described above. When present, the total amount of synthetic oils and/or oils other than vegetable oils, may be about 5% or less, about 4% or less, about 3% or less, about 2% or less, about 1% or less, or about 0.5% or less by weight, based on the total weight of the base composition. In some embodiments, a hair color-altering base composition according to the present disclosure is free of or essentially free of synthetic oils and/or oils other than vegetable oils. In some cases, hair color-altering base compositions do not include oils other than vegetable oils.

Alkyl Polyglucosides

In various embodiments, hair color-altering base compositions according to the present disclosure comprise at least one alkyl polyglucoside. Suitable alkyl polyglucosides that may be included in the compositions include alkyl polyglucosides having the following formula (I):

$$R_1—O—(R_2O)_n\text{-}Z_{(x)} \quad (I)$$

wherein:

R_1 is an alkyl group having 8-18 carbon atoms;

R_2 is an ethylene or propylene group;

Z is a saccharide group with 5-6 carbon atoms;

n is an integer ranging from 0 to 10; and

x is an integer ranging from 1 to 5.

Non-limiting examples of alkyl polyglucosides include arachidyl glucoside, C_{12-20} alkyl glucoside, caprylyl/capryl glucoside, cetearyl glucoside, coco-glucoside, lauryl glucoside, decyl glucoside, and sodium lauryl glucose carboxylate. In some cases, the alkyl polyglucoside compound is selected from the group consisting of cetearyl glucoside, lauryl glucoside, decyl glucoside, coco glucoside, and a mixture thereof. In at least one instance, the glucoside is cetearyl glucoside.

In various embodiments, the total amount of alkyl polyglucoside(s) in the ranges from about 0.01% to about 5%, including all subranges therebetween, such as from about to about 5%, from about 0.1% to about 4.5%, from about 0.1% to about 4%, from about 0.1% to about 3.5%, from about 0.1% to about 3%, from about 0.1% to about 2.5%, from about 0.1% to about 2%, from about 0.1% to about 1.5%, from about 0.1% to about 1%, from about 0.2% to about 4.5%, from about 0.2% to about 4%, from about 0.2% to about 3.5%, from about 0.2% to about 3%, from about 0.2% to about 2.5%, from about to about 2%, from about 0.2% to about 1.5%, from about 0.2% to about 1%, from about 0.2% to about 0.8%, from about 0.5% to about 4.5%, from about 0.5% to about 4%, from about 0.5% to about 3.5%, from about 0.5% to about 3%, from about 0.5% to about 2.5%, from about 0.5% to about 2%, from about 0.5% to about 1.5%, from about 0.5% to about 1% by weight, based on the total weight of the composition. In certain embodiments, the total amount of alkyl polyglucoside(s) is about 0.1%, about 0.2%, about about 0.4%, about 0.5%, about 0.6%, about 0.7%, about 0.8%, about 0.9%, or about 1% by weight, relative to the total weight of the base composition. In at least one embodiment, the compositions comprise from about 0.01% to about 3%, such as from about 0.1% to about 3%, from about 0.1% to about 2%, from about 0.1% to about 1%, or about 0.5% of cetearyl glucoside.

Alkalizing Agents

Hair color-altering base compositions according to the disclosure comprise at least one alkalizing agent. The alkalizing agents may be chosen from organic alkalizing agents and/or mineral alkalizing agents.

As non-limiting examples, suitable organic alkalizing agents may be chosen from alkanolamines. In various embodiment, suitable alkanolamines may be chosen from mono-, di- or trialkylamines, comprising one to three identical or different C1-C4 hydroxyalkyl radicals, ethylamines, ethyleneamines, quinoline, aniline and cyclic amines, such as pyrroline, pyrrole, pyrrolidine, imidazole, imidazolidine, imidazolidinine, morpholine, pyridine, piperidine, pyrimidine, piperazine, triazine and derivatives thereof. In some embodiments, alkanolamine type that may be mentioned include but not limited to: monoethanolamine (also known as ethanolamine or MEA), diethanolamine, triethanolamine, monoisopropanolamine, diisopropanolamine, N-dimethylaminoethanolamine, 2-amino-2-methyl-1-propanol, triisopropanolamine, 2-amino-2-methyl-1,3-propanediol, 3-amino-1,2-propanediol, 3-dimethylamino-1,2-propanediol, 2-amino-2-methyl-1-propanol, and tris(hydroxymethylamino)methane. In one embodiment, at least one alkalizing agent is chosen from alkanolamines, such as monoethanolamine. Optionally, the organic alkalizing agent

may consist essentially of or consist of alkanolamines, or may consist essentially of or consist of monoethanolamine.

As non-limiting examples, suitable mineral alkalizing agents may be chosen from ammonia, ammonium carbonates, sodium carbonates, potassium carbonates, ammonium bicarbonates, sodium bicarbonates, potassium bicarbonates, ammonium hydroxides, sodium hydroxides, potassium hydroxides, salts thereof, hydrates thereof, or mixtures thereof. In some embodiments, the hair color-altering base compositions comprise ammonia and/or ammonium hydroxide. Optionally, the mineral alkalizing agent may consist essentially of or consist of ammonia and/or ammonium hydroxide.

In some embodiments, a hair color-altering base composition disclosed herein comprises at least one organic alkalizing agent and at least one mineral alkalizing agent. In some embodiments, the at least one alkalizing agent comprises, consists essentially of or consists of ammonia or ammonium hydroxide, alkanolamines, salts thereof, hydrates thereof, or combinations thereof. In at least one embodiment, a hair color-altering base composition disclosed herein comprises both monoethanolamine and ammonium hydroxide.

In some embodiments, alkalizing agents present in a hair color-altering base composition may be only chosen from organic alkalizing agents, and the hair color-altering base composition is free or substantially free of mineral alkalizing agents, such as ammonia and/or ammonium hydroxide. In this case, the base composition may comprise less than about 0.5%, less than about 0.4%, less than about 0.3%, less than about 0.2%, less than about 0.1%, or less than about 0.05% of mineral alkalizing agents. In certain embodiments, the hair color-altering base compositions disclosed herein comprise one or more organic alkalizing agents and are free or substantially free of ammonia and/or ammonium-based compounds.

In various embodiments, the amount of organic alkalizing agents may range from about 0.1% to about 10%, including all subranges therebetween, such as from about to about 9%, from about 0.1% to about 8%, from about 0.1% to about 7%, from about 0.1% to about 6%, from about 0.1% to about 5%, from about 0.1% to about 4%, from about 0.5% to about 10%, from about 0.5% to about 9%, from about 0.5% to about 8%, from about 0.5% to about 7%, from about 0.5% to about 6%, from about 0.5% to about 5%, from about 0.5% to about 4% by weight, based on the total weight of the hair color-altering base composition.

As further examples, in some embodiments, the alkalizing agents may comprise at least one organic alkalizing agent and at least one mineral alkalizing agent, wherein the at least one organic alkalizing agent is present in an amount of at least 0.1%, such as from about 0.1% to about 10%, including all subranges therebetween, such as from about to about 10%, from about 0.5% to about 10% by weight, relative to the total weight of the hair color-altering base composition; and the at least one mineral alkalizing agent is present in an amount ranging from about 0.1% to about 15%, such as from about 0.1% to about 10% by weight, relative to the total weight of the hair color-altering base composition.

In some non-limiting embodiments where the hair color-altering base composition comprises at least one organic alkalizing agent and at least one mineral alkalizing agent. For instance, in one embodiments, the hair color-altering base composition comprises monoethanolamine in combination with ammonia and/or ammonium hydroxide.

When both organic alkalizing agents and mineral alkalizing agents are present, the total amount of the alkalizing agents may range from about 1% to about 20%, including all subranges therebetween, such as from about 1.5% to about 18%, from about 2% to about 16%, from about 2.5% to about 15%, or from about 3% to about 14%, or from about 4% to about 13% by weight, relative to the total weight of the base composition, for example from about 1% to about 18%, from about 1% to about 16%, from about 1% to about 15%, from about 1% to about 14%, from about 1% to about 13%, from about 1% to about 12%, from about 1.5% to about 20%, from about 1.5% to about 16%, from about 1.5% to about 15%, from about 1.5% to about 14%, from about 1.5% to about 13%, from about 1.5% to about 12%, from about 2% to about 20%, from about 2% to about 18%, from about 2% to about 15%, from about 2% to about 14%, from about 2% to about 13%, from about 2% to about 12%, from about 2.5% to about 20%, from about 2.5% to about 18%, from about 2.5% to about 16%, from about 2.5% to about 14%, from about 2.5% to about 13%, from about 2.5% to about 12%, from about 3% to about 20%, from about 3% to about 18%, from about 3% to about 16%, from about 3% to about 15%, from about 3% to about 13%, from about 3% to about 12%, from about 4% to about 20%, from about 4% to about 18%, from about 4% to about 16%, from about 4% to about 15%, from about 4% to about 14%, or from about 4% to about 12% by weight, relative to the total weight of the base composition.

Hair Color-Altering Agents

Hair color-altering base compositions according to the present disclosure may optionally comprise one or more hair color-altering agents (hair colorants). The one or more hair color-altering agents are generally chosen from oxidation dyes, i.e., oxidation bases or oxidative dye precursors, optionally combined with one or more couplers.

In various embodiments, suitable oxidation dyes bases may be chosen from para-phenylenediamines, bis(phenyl) alkylenediamines, para-aminophenols, ortho-aminophenols and heterocyclic bases, the addition salts thereof, or combinations thereof.

Among the para-phenylenediamines that may be mentioned, for example, are para-phenylenediamine, para-toluenediamine, 2-chloro-para-phenylenediamine, 2,3-dimethyl-para-phenylenediamine, 2,6-dimethyl-para-phenylenediamine, 2,6-diethyl-para-phenylenediamine, 2,5-dimethyl-para-phenylenediamine, N,N-dimethyl-para-phenylenediamine, N,N-diethyl-para-phenylenediamine, N,N-dipropyl-para-phenylenediamine, 4-amino-N,N-diethyl-3-methylaniline, N,N-bis(β-hydroxyethyl)-para-phenylenediamine, 4-N,N-bis(β-hydroxyethyl)amino-2-methylaniline, 4-N,N-bis(β-hydroxyethyl)amino-2-chloroaniline, 2-β-hydroxyethyl-para-phenylenediamine, 2-methoxymethyl-para-phenylenediamine, 2-fluoro-para-phenylenediamine, 2-isopropyl-para-phenylenediamine, N-(β-hydroxypropyl)-para-phenylenediamine, 2-hydroxymethyl-para-phenylenediamine, N,N-dimethyl-3-methyl-para-phenylenediamine, N-ethyl-N-(β-hydroxyethyl)-para-phenylenediamine, N-(β,γ-dihydroxypropyl)-para-phenylenediamine, N-(4'-aminophenyl)-para-phenylenediamine, N-phenyl-para-phenylenediamine, 2-β-hydroxyethyloxy-para-phenylenediamine, 2-β-acetylaminoethyloxy-para-phenylenediamine, N-(β-methoxyethyl)-para-phenylenediamine, 4-aminophenylpyrrolidine, 2-thienyl-para-phenylenediamine, 2-β-hydroxyethylamino-5-aminotoluene and 3-hydroxy-1-(4'-aminophenyl)pyrrolidine, and the addition salts thereof with an acid.

Among the para-phenylenediamines mentioned above, para-phenylenediamine, para-toluenediamine, 2-isopropyl-

para-phenylenediamine, 2-β-hydroxyethyl-para-phenylenediamine, 2-β-hydroxyethyloxy-para-phenylenediamine, 2,6-dimethyl-para-phenylenediamine, 2,6-diethyl-para-phenylenediamine, 2,3-dimethyl-para-phenylenediamine, N,N-bis(β-hydroxyethyl)-para-phenylenediamine, 2-chloro-para-phenylenediamine and 2-β-acetylaminoethyloxy-para-phenylenediamine, and the addition salts thereof with an acid, are particularly useful.

Among the bis(phenyl)alkylenediamines that may be mentioned, for example, are N,N'-bis(β-hydroxyethyl)-N,N'-bis(4'-aminophenyl)-1,3-diaminopropanol, N,N'-bis(β-hydroxyethyl)-N,N'-bis(4'-aminophenyl)ethylenediamine, N,N'-bis(4-aminophenyl)tetramethylenediamine, N,N'-bis(β-hydroxyethyl)-N,N'-bis(4-aminophenyl)tetramethylenediamine, N,N'-bis(4-methylaminophenyl)tetramethylenediamine, N,N'-bis(ethyl)-N,N'-bis(4'-amino-3'-methylphenyl)ethylenediamine and 1,8-bis(2,5-diaminophenoxy)-3,6-dioxaoctane, and the addition salts thereof.

Among the para-aminophenols that may be mentioned, for example, are para-aminophenol, 4-amino-3-methylphenol, 4-amino-3-fluorophenol, 4-amino-3-chlorophenol, 4-amino-3-hydroxymethylphenol, 4-amino-2-methylphenol, 4-amino-2-hydroxymethylphenol, 4-amino-2-methoxymethylphenol, 4-amino-2-aminomethylphenol, 4-amino-2-(β-hydroxyethylaminomethyl)phenol and 4-amino-2-fluorophenol, and the addition salts thereof with an acid.

Among the ortho-aminophenols that may be mentioned, for example, are 2-aminophenol, 2-amino-5-methylphenol, 2-amino-6-methylphenol and 5-acetamido-2-aminophenol, and the addition salts thereof. Among the meta-aminophenols, 3-aminophenol and salts thereof, may be mentioned.

Among the heterocyclic bases that may be mentioned, for example, are pyridine derivatives, pyrimidine derivatives and pyrazole derivatives.

Among the pyridine derivatives that may be mentioned are the compounds described, for example, in patents GB 1 026 978 and GB 1 153 196, for instance 2,5-diaminopyridine, 2-(4-methoxyphenyl)amino-3-aminopyridine and 3,4-diaminopyridine, and the addition salts thereof.

Other pyridine oxidation bases can include the 3-aminopyrazolo[1,5-a]pyridine oxidation bases or the addition salts thereof described, for example, in patent application FR2 801 308. Examples that may be mentioned include pyrazolo[1,5-a]pyrid-3-ylamine, 2-acetylaminopyrazolo[1,5-a]pyrid-3-ylamine, 2-morpholin-4-ylpyrazolo[1,5-a]pyrid-3-ylamine, 3-aminopyrazolo[1,5-a]pyridine-2-carboxylic acid, 2-methoxypyrazolo[1,5-a]pyrid-3-ylamine, (3-aminopyrazolo[1,5-a]pyrid-7-yl)methanol, 2-(3-aminopyrazolo[1,5-a]pyrid-5-yl)ethanol, 2-(3-aminopyrazolo[1,5-a]pyrid-7-yl)ethanol, (3-aminopyrazolo[1,5-a]pyrid-2-yl)methanol, 3,6-diaminopyrazolo[1,5-a]pyridine, 3,4-diaminopyrazolo[1,5-a]pyridine, pyrazolo[1,5-a]pyridine-3,7-diamine, 7-morpholin-4-ylpyrazolo[1,5-a]pyrid-3-ylamine, pyrazolo[1,5-a]pyridine-3,5-diamine, 5-morpholin-4-ylpyrazolo[1,5-a]pyrid-3-ylamine, 2-[(3-aminopyrazolo[1,5-a]pyrid-5-yl)(2-hydroxyethyl)amino]ethanol, 2-[(3-aminopyrazolo[1,5-a]pyrid-7-yl)(2-hydroxyethyl)amino]ethanol, 3-aminopyrazolo[1,5-a]pyridin-5-ol, 3-aminopyrazolo[1,5-a]pyridin-4-ol, 3-aminopyrazolo[1,5-a]pyridin-6-ol, 3-aminopyrazolo[1,5-a]pyridin-7-ol, 2-O-hydroxyethoxy-3-amino-pyrazolo[1,5-a]pyridine; 2-(4-dimethylpyperazinium-1-yl)-3-amino-pyrazolo[1,5-a]pyridine; and the addition salts thereof.

In certain embodiments, oxidation bases can be selected from 3-aminopyrazolo-[1,5-a]-pyridines, optionally substituted on carbon atom 2 by:

(a) one (di)(C_1-C_6)(alkyl)amino group wherein said alkyl group can be substituted by at least one hydroxy, amino, imidazolium group;

(b) one heterocycloalkyl group containing from 5 to 7 members chain, and from 1 to 3 heteroatomes, potentially cationic, potentially substituted by one or more (C1-C6)alkyl, such as di(C1-C4)alkylpiperazinium; or

(c) one (C1-C_6)alkoxy potentially substituted by one or more hydroxy groups such as α-hydroxyalkoxy, and the addition salts thereof.

Among the pyrimidine derivatives that may be mentioned are the compounds described, for example, in the patents DE 2359399; JP 88-169571; JP 05-63124; EP 0770375, or patent application WO 96/15765, such as 2,4,5,6-tetraaminopyrimidine, 4-hydroxy-2,5,6-triaminopyrimidine, 2-hydroxy-4,5,6-triaminopyrimidine, 2,4-dihydroxy-5,6-diaminopyrimidine, 2,5,6-triaminopyrimidine and their addition salts and their tautomeric forms, when a tautomeric equilibrium exists.

Among the pyrazole derivatives that may be mentioned are the compounds described in the patents DE 3843892, DE 4133957 and patent applications WO 94/08969, WO 94/08970, FR-A-2 733 749 and DE 195 43 988, such as 4,5-diamino-1-methylpyrazole, 4,5-diamino-1-(β-hydroxyethyl)pyrazole, 3,4-diaminopyrazole, 4,5-diamino-1-(4'-chlorobenzyl)pyrazole, 4,5-diamino-1,3-dimethylpyrazole, 4,5-diamino-3-methyl-1-phenylpyrazole, 4,5-diamino-1-methyl-3-phenylpyrazole, 4-amino-1,3-dimethyl-5-hydrazinopyrazole, 1-benzyl-4,5-diamino-3-methylpyrazole, 4,5-diamino-3-tert-butyl-1-methylpyrazole, 4,5-diamino-1-tert-butyl-3-methylpyrazole, 4,5-diamino-10-hydroxyethyl)-3-methylpyrazole, 4,5-diamino-1-ethyl-3-methylpyrazole, 4,5-diamino-1-ethyl-3-(4'-methoxyphenyl)pyrazole, 4,5-diamino-1-ethyl-3-hydroxymethylpyrazole, 4,5-diamino-3-hydroxymethyl-1-methylpyrazole, 4,5-diamino-3-hydroxymethyl-1-isopropyl-pyrazole, 4,5-diamino-3-methyl-1-isopropylpyrazole, 4-amino-5-(2'-aminoethyl)amino-1,3-dimethylpyrazole, 3,4,5-triaminopyrazole, 1-methyl-3,4,5-triaminopyrazole, 3,5-diamino-1-methyl-4-methylaminopyrazole, 3,5-diamino-4-(β-hydroxyethyl)amino-1-methylpyrazole, and the addition salts thereof. 4,5-Diamino-1-(β-methoxyethyl)pyrazole may also be used. A 4,5-diaminopyrazole may be used, for example 4,5-diamino-1-(β-hydroxyethyl)pyrazole and/or a salt thereof.

Pyrazole derivatives that may also be mentioned include diamino-N,N-dihydro-pyrazolopyrazolones and especially those described in patent application FR-A-2 886 136, such as the following compounds and the addition salts thereof: 2,3-diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-ethylamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-isopropylamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-(pyrrolidin-1-yl)-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 4,5-diamino-1,2-dimethyl-1,2-dihydropyrazol-3-one, 4,5-diamino-1,2-diethyl-1,2-dihydropyrazol-3-one, 4,5-diamino-1,2-di-(2-hydroxyethyl)-1,2-dihydropyrazol-3-one, 2-amino-3-(2-hydroxyethyl)amino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-dimethylamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2,3-diamino-5,6,7,8-tetrahydro-1H,6H-pyridazino[1,2-a]pyrazol-1-one, 4-amino-1,2-diethyl-5-(pyrrolidin-1-yl)-1,2-dihydropyrazol-3-one, 4-amino-5-(3-dimethylaminopyrrolidin-1-yl)-1,2-diethyl-1,2-dihydropyrazol-3-one, 2,3-diamino-6-hydroxy-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one.

2,3-Diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one and/or a salt thereof can be chosen.

4,5-Diamino-1-(β-hydroxyethyl)pyrazole and/or 2,3-diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one and/or a salt thereof can be used as heterocyclic bases.

Hair color-altering base compositions according to the disclosure may optionally comprise one or more couplers advantageously chosen from those conventionally used in dyeing or coloring of keratinous substrates. Among these couplers, mention may be made especially of meta-phenylenediamines, meta-aminophenols, meta-diphenols, naphthalene-based couplers and heterocyclic couplers, and also the addition salts thereof.

Mention may be made, for example, of 2-methyl-5-aminophenol, 5-N-(ß-hydroxyethyl)amino-2-methylphenol, 3-aminophenol, 5-amino-6-chloro-o-cresol (3-amino-2-chloro-6-methylphenol), 1,3-dihydroxybenzene, 1,3-dihydroxy-2-methyl-benzene, 4-chloro-1,3-dihydroxybenzene, 2,4-diamino-1-(ß-hydroxyethyloxy)benzene, 2-amino-4-(ß-hydroxyethylamino)-1-methoxybenzene, 1,3-diaminobenzene, 1,3-bis(2,4-diaminophenoxy)propane, 3-ureidoaniline, 3-ureido-1-dimethylaminobenzene, sesamol, 1-ß-hydroxyethylamino-3,4-methylenedioxybenzene, α-naphthol, 2-methyl-1-naphthol, 6-hydroxyindole, 4-hydroxyindole, 4-hydroxy-N-methylindole, 2-amino-3-hydroxypyridine, 6-hydroxybenzomorpholine, 3,5-diamino-2,6-dimethoxypyridine, 1-N-(β-hydroxyethyl)amino-3,4-methylenedioxybenzene, 2,6-bis(ß-hydroxyethylamino)-toluene, 6-hydroxyindoline, 2,6-dihydroxy-4-methylpyridine, 1-H-3-methylpyrazol-5-one, 1-phenyl-3-methylpyrazol-5-one, 2,6-dimethylpyrazolo[1,5-b]-1,2,4-triazole, 2,6-dimethyl[3,2-c]-1,2,4-triazole and 6-methylpyrazolo[1,5-a]benzimidazole, the addition salts thereof with an acid, and mixtures thereof.

In general, the addition salts of the oxidation bases and couplers that may be used in the context of the invention are especially selected from the addition salts with an acid such as the hydrochlorides, hydrobromides, sulfates, citrates, succinates, tartrates, lactates, tosylates, benzenesulfonates, phosphates and acetates.

In some embodiments, the base compositions disclosed herein include at least one oxidation base chosen from toluene—toluene-2,5-diamine, acid salts thereof, or solvates thereof. In one embodiment, the base compositions may include at least one coupler chosen 2,4-diaminophenoxyethanol, and derivatives thereof, addition salts thereof, solvates thereof, or solvates of salts thereof; meta-aminophenol (1-hydroxy-3-aminobenzene) and derivatives thereof, addition salts thereof, solvates thereof, or solvates of salts thereof; or mixtures thereof.

The oxidation base(s), when present, may individually or collectively be present in an amount ranging from about 0.0001% to about 10% by weight, including all subranges therebetween, such as such as from about 0.0001% to about 8%, from about to about 6%, from about 0.0001% to about 4%, from about 0.0001% to about 2%, from about 0.001% to about 10%, from about 0.001% to about 8%, from about to about 6%, from about 0.001% to about 4%, from about 0.001% to about 2% by weight, from about 0.003% to about 10%, from about 0.003% to about 8%, from about to about 6%, from about 0.003% to about 4%, from about 0.003% to about 2%, from about 0.005% to about 10%, from about 0.005% to about 8%, from about 0.005% to about 6%, from about 0.005% to about 4%, from about 0.005% to about 2% by weight, relative to the total weight of the base composition, including increments and ranges therein there between.

The coupler(s), when present, may individually or collectively be present in an amount ranging from about 0.0001% to about 10% by weight, including all subranges therebetween, such as from about such as from about 0.0001% to about 8%, from about to about 6%, from about 0.0001% to about 4%, from about 0.0001% to about 2%, from about 0.001% to about 10%, from about 0.001% to about 8%, from about to about 6%, from about 0.001% to about 4%, from about 0.001% to about 2% by weight, from about 0.003% to about 10%, from about 0.003% to about 8%, from about to about 6%, from about 0.003% to about 4%, from about 0.003% to about 2%, from about 0.005% to about 10%, from about 0.005% to about 8%, from about 0.005% to about 6%, from about 0.005% to about 4%, from about 0.005% to about 2% by weight, relative to the total weight of the base composition, including increments and ranges therein there between.

Solvents

Hair color-altering base compositions according to the disclosure comprise a cosmetically acceptable solvent. The solvent may comprise water, non-aqueous solvents, or mixtures thereof.

In some embodiments, the solvent comprises, consists essentially of, or consists of water. The total amount of water in the compositions may vary depending on the type of composition and the desired consistency, viscosity, etc.

In certain embodiments, the composition comprises one or more non-aqueous solvents, other than or in addition to ingredients discussed above. For example, C1-C4 alcohols, organic solvents, fatty alcohols, fatty ethers, fatty esters, polyols other than those described above, glycols, vegetable oils, mineral oils, liposomes, laminar lipid materials, or any a mixture thereof. Non-limiting examples of solvents which may be used include alkane polyols such as 1,2,6-hexanetriol, trimethylolpropane, ethylene glycol, propylene glycol, diethylene glycol, hexylene glycol, triethylene glycol, tetraethylene glycol, pentaethylene glycol, dipropylene glycol, 2-butene-1,4-diol, 2-ethyl-1,3-hexanediol, 2-methyl-2,4-pentanediol, caprylyl glycol, 1,2-hexanediol, 1,2-pentanediol, and 4-methyl-1,2-pentanediol; alkyl alcohols having 1 to 4 carbon atoms such as ethanol, methanol, butanol, propanol, and isopropanol (isopropyl alcohol); glycol ethers such as ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, ethylene glycol monomethyl ether acetate, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol mono-n-propyl ether, ethylene glycol mono-iso-propyl ether, diethylene glycol mono-iso-propyl ether, ethylene glycol mono-n-butyl ether, ethylene glycol mono-t-butyl ether, diethylene glycol mono-t-butyl ether, 1-methyl-1-methoxybutanol, propylene glycol monomethyl ether, propylene glycol monoethyl ether, propylene glycol mono-t-butyl ether, propylene glycol mono-n-propyl ether, propylene glycol mono-iso-propyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl ether, dipropylene glycol mono-n-propyl ether, and dipropylene glycol mono-iso-propyl ether; 2-pyrrolidone, N-methyl-2-pyrrolidone, 1,3-dimethyl-2-imidazolidinone, formamide, acetamide, dimethyl sulfoxide, sorbitol, sorbitan, acetine, diacetine, triacetine, sulfolane, or mixtures thereof. At least in some embodiments, the compositions contain water and at least one, for example two or more, additional solvent chosen from caprylyl glycol, hexylene glycol, ethylhexylglycerin, glycerin, or mixtures thereof.

The solvent may be present in the base composition in an amount ranging from about 20% to about 90% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween. For example, in one embodiment, the total amount of solvent may be about 20%

to about 85%, about 25% to about 85%, about 30% to about 85%, about 40% to about 85%, about 45% to 85%, or about 50% to 80% by weight, relative to the total weight of the base composition.

In certain embodiments, the solvent is primarily comprised of water, such as from about 20% to about 85%, about 20% to about 80%, about 20% to about 75%, about 20% to about 70%, about 20% to about 60%, about 20% to about 50%, about 20% to about 40%; from about 25% to about 90%%, about 25% to about 85%, about 25% to about 80%, about 25% to about 75%, about 25% to about 70%, about 25% to about 60%, about 25% to about 50%, about 25% to about 40%; from about 30% to about 90%%, about 30% to about 85%, about 30% to about 80%, about 30% to about 75%, about 30% to about 70%, about 30% to about 60%, about 30% to about 50%; from about 35% to about 90%%, about 35% to about 85%, about 35% to about 80%, about 35% to about 75%, about 35% to about 70%, about 35% to about 60%, about 35% to about 50%; from 40% to about 90%%, about 40% to about 85%, about 40% to about 80%, about 40% to about 75%, about 40% to about 70%, or about 40% to about 60% by weight, relative to the total weight of the base composition.

Thickening Agents

In some embodiments, hair color-altering base compositions described herein may further include at least one thickening agent. "Thickening agents" as used here may be referred to as "thickeners" or "viscosity modifying agents." Thickening agents are typically included to increase the viscosity of the compositions. Nonetheless, in some instances, certain thickening agents provide additional, surprising benefits to the base compositions.

In some embodiments, thickening agents are water-soluble, and increase the viscosity of water or form an aqueous gel when ingredients according to the present disclosure are dispersed/dissolved in water to formulate the base compositions. The aqueous solution may be heated and cooled, or neutralized, for forming the gel, if necessary. The thickener may be dispersed/dissolved in an aqueous solvent that is soluble in water, e.g., ethyl alcohol when it is dispersed/dissolved in water.

As non-limiting examples, thickening agents may be chosen from xanthan gum, guar gum, biosaccharide gum, cellulose, acacia seneca gum, *sclerotium* gum, agarose, pectin, gellan gum, hyaluronic acid, or mixtures thereof. Additionally, the at least one thickening agent may include polymeric thickening agents chosen from ammonium polyacryloyldimethyl taurate, ammonium acryloyldimethyltaurate/VP copolymer, sodium polyacrylate, acrylates copolymers, polyacrylamide, carbomer, acrylates/C10-30 alkyl acrylate crosspolymer, or mixtures thereof. In some cases, the composition may optionally include ammonium polyacryloyldimethyl taurate and/or sodium polyacrylate. Suitable thickening agents may be found, for example, in U.S. Pat. No. 11,337,906, which is incorporated herein by reference.

According to some embodiments, non-limiting examples of thickening agents may include polyacrylate crosspolymers or crosslinked polyacrylate polymers, cationic acrylate copolymers, anionic acrylic or carboxylic acid polymers, polyacrylamide polymers, polysaccharides such as cellulose derivatives, gums, polyquaterniums, vinylpyrrolidone homopolymers/copolymers, C8-C24 hydroxyl substituted aliphatic acid, C8-C24 conjugated aliphatic acid, sugar fatty esters, polyglyceryl esters, or mixtures thereof.

Exemplary thickening agents that may be mentioned include: (1) carboxylic acid or carboxylate based homopolymers or co-polymers, which can be linear or crosslinked; (2) celluloses; (3) polyvinylpyrrolidone (PVP) and co-polymers; (4) sucrose esters; (5) polyglyceryl esters; (6) gums; and mixtures thereof.

(1) Carboxylic Acid or Carboxylate Based Homopolymers or Co-Polymers, which can be Linear or Crosslinked:

These polymers contain one or more monomers derived from acrylic acid, substituted acrylic acids, and salts and esters of these acrylic acids (acrylates) and the substituted acrylic acids. Commercially available polymers include those sold under the trade names CARBOPOL, ACRYSOL, POLYGEL, SOKALAN, CARBOPOL ULTREZ, and POLYGEL. Examples of commercially available carboxylic acid polymers include the carbomers, which are homopolymers of acrylic acid crosslinked with allyl ethers of sucrose or pentaerytritol. The carbomers are available as the CARBOPOL 900 series from B.F. Goodrich (e.g., CARBOPOL 954). In addition, other suitable carboxylic acid polymeric agents include ULTREZ 10 (B.F. Goodrich) and copolymers of C10-30 alkyl acrylates with one or more monomers of acrylic acid, methacrylic acid, or one of their short chain (i.e., C1-4 alcohol) esters, wherein the crosslinking agent is an allyl ether of sucrose or pentaerytritol. These copolymers are known as acrylates/C10-C30 alkyl acrylate crosspolymers and are commercially available as CARBOPOL 1342, CARBOPOL 1382, PEMULEN TR-1, and PEMULEN TR-2, from B.F. Goodrich.

Other suitable carboxylic acid or carboxylate polymeric agents include copolymers of acrylic acid and alkyl C5-C10 acrylate, copolymers of acrylic acid and maleic anhydride, and polyacrylate crosspolymer-6. Polyacrylate Crosspolymer-6 is available in the raw material known as SEPIMAX ZEN from Seppic.

Another suitable carboxylic acid or carboxylate polymeric agent includes acrylamidopropyltrimonium chloride/acrylates copolymer, a cationic acrylates copolymer (or a quaternary ammonium compound), available as a raw material known under the tradename of SIMULQUAT HC 305 from Seppic.

In certain embodiments, the carboxylic acid or carboxylate polymer thickening agents useful herein are those selected from carbomers, acrylates/C10-C30 alkyl acrylate crosspolymers, polyacrylate crosspolymer-6, acrylamidopropyltrimonium chloride/acrylates copolymer, or mixtures thereof.

(2) Celluloses:

Non-limiting examples of celluloses include cellulose, carboxymethyl hydroxyethylcellulose, cellulose acetate propionate carboxylate, hydroxyethylcellulose, hydroxyethyl ethylcellulose, hydroxypropylcellulose, hydroxypropyl methylcellulose, methyl hydroxyethylcellulose, microcrystalline cellulose, sodium cellulose sulfate, or mixtures thereof. In some instances, the cellulose is selected from water-soluble cellulose derivatives (for example, carboxymethyl cellulose, methyl cellulose, methylhydroxypropyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, cellulose sulfate sodium salt). Furthermore, in some instance, the cellulose is optionally hydroxypropylcellulose (HPC).

(3) Polyvinylpyrrolidone (PVP) and Co-Polymers:

Non-limiting examples include Polyvinylpyrrolidone (PVP), Polyvinylpyrrolidone (PVP)/vinyl acetate copolymer (PVP/VA copolymer), polyvinylpyrrolidone (PVP)/eicosene copolymer, PVP/hexadecene copolymer, etc. Commercially available polyvinylpyrrolidone includes LUVISKOL K30, K85, K90 available from BASF. Commercially available copolymers of vinylpyrrolidone and vinylacetate include

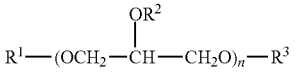
LUVISKOL VA37, VA64 available from BASF; copolymers of vinylpyrrolidone, methacrylamide, and vinylimidazole (INCI: VP/Methacrylamide/Vinyl Imidazole Copolymer) is commercially available as LUVISET from BASF. In some instances, PVP and PVP/VA copolymer may be chosen.

(4) Sucrose Esters:

Non-limiting examples include sucrose palmitate, sucrose cocoate, sucrose monooctanoate, sucrose monodecanoate, sucrose mono- or dilaurate, sucrose monomyristate, sucrose mono- or dipalmitate, sucrose mono- and distearate, sucrose mono-, di- or trioleate, sucrose mono- or dilinoleate, sucrose pentaoleate, sucrose hexaoleate, sucrose heptaoleate or sucrose octooleate, and mixed esters, such as sucrose palmitate/stearate, and mixtures thereof.

(5) Polyglyceryl Esters:

Non-limiting polyglycerol esters of fatty acids (polygylceryl esters) include those of the following formula (II):



(II)

wherein n ranges from 2 to 20, from 2 to 10, or from 2 to 5, or is 2, 3, 4, 5, 6, 7, 8, 9, or and R^1, R^2, and R^3 each may independently be chosen from fatty acid moieties or hydrogen, provided that at least one of R^1, R^2, and R^3 is a fatty acid moiety. For instance, R^1, R^2, and R^3 may be saturated or unsaturated, linear or branched, and have a length of C1-C40, C1-C30, C1-C25, or C1-C20, C1-C16, or C1-C10. Additionally, non-limiting examples of nonionic polyglycerol esters of fatty acids include polyglyceryl-4 caprylate/caprate, polyglyceryl-10 caprylate/caprate, polyglyceryl-4 caprate, polyglyceryl-caprate, polyglyceryl-4 laurate, polyglyceryl-5 laurate, polyglyceryl-6 laurate, polyglyceryl-10 laurate, polyglyceryl-10 cocoate, polyglyceryl-10 myristate, polyglyceryl-oleate, polyglyceryl-10 stearate, and mixtures thereof.

(6) Gums:

Non-limiting examples of gums include gum arabic, tragacanth gum, karaya gum, guar gum, gellan gum, tara gum, locust bean gum, tamarind gum, xanthan gum, locust bean gum, Seneca gum, *sclerotium* gum, gellan gum, etc.

In various embodiments, the total amount of thickening agents, when present in the hair color-altering base compositions, may range from about 0.01% to about 10% by weight, including all subranges therebetween, such as from about 0.01% to about 9%, from about 0.01% to about 8%, from about 0.01% to about 6%, from about 0.01% to about 4%, from about 0.01% to about 3%, from about 0.01% to about 2.5%, from about 0.01% to about 2%, from about 0.01% to about 1.5%, from about 0.01% to about 1%, from about to about 10%, from about 0.05% to about 8%, from about 0.05% to about 6%, from about 0.05% to about 4%, from about 0.05% to about 3%, from about 0.05% to about 2.5%, from about 0.05% to about 2%, from about 0.05% to about 1.5%, from about 0.05% to about 1%, from about 0.1% to about 10%, from about 0.1% to about 8%, from about to about 6%, from about 0.1% to about 4%, from about 0.1% to about 3%, from about 0.1% to about 2.5%, from about 0.1% to about 2%, from about 0.1% to about 1.5%, or from about 0.1% to about 1% by weight, based on the total weight of the base composition. For example, compositions according to the disclosure may comprise a total amount of thickener ranging from about 0.1% to about 0.9%, about 0.2% to about 0.8%, about 0.3% to about 0.7%, or about 0.4% to about 0.6% by weight, based on the total weight of the base composition.

Polyols

In some embodiments, hair color-altering base compositions according to the present disclosure may further comprise one or more polyols. In certain embodiments, the base compositions disclosed herein comprise at least two polyols. As used herein, the term "polyol" refers to an organic molecule comprising at least two free hydroxyl groups. The polyols may be liquid at ambient temperature (25° C.). Suitable polyols that may be comprised in the compositions disclosed herein may be glycols or compounds with numerous hydroxyl groups. In some cases, the at least on polyol is chosen from polyols having 2-32 carbon atoms, i.e., C2-C32 polyols, such as from 3 to 16 carbon atoms, or from 3 to 12 carbon atoms.

By way of example, the at least one polyol, when present, may be chosen from ethylene glycol, propylene glycol, butylene glycol, hexylene glycol, glycerin, diglycerin, diethylene glycol, and dipropylene glycol, polyethylene glycols, or mixtures thereof. In some cases, the compositions include propylene glycol. In some further cases, the compositions include one or both of propylene glycol and butylene glycol. Additionally, in some cases, the composition comprises propylene glycol, and optionally at least one polyol other than propylene glycol.

Non-limiting examples of polyols that may, optionally, be included in the compositions according to the present disclosure include and/or may be chosen from alkanediols such as glycerin, 1,2,6-hexanetriol, trimethylolpropane, ethylene glycol, propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, pentaethylene glycol, dipropylene glycol, 2-butene-1,4-diol, 2-ethyl-1,3-hexanediol, 2-methyl-2,4-pentanediol, caprylyl glycol, 1,2-hexanediol, 1,2-pentanediol, and 4-methyl-1,2-pentanediol; glycol ethers such as ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, ethylene glycol monomethyl ether acetate, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol mono-n-propyl ether, ethylene glycol mono-iso-propyl ether, diethylene glycol mono-iso-propyl ether, ethylene glycol mono-n-butyl ether, ethylene glycol mono-t-butyl ether, diethylene glycol mono-t-butyl ether, 1-methyl-1-methoxybutanol, propylene glycol monomethyl ether, propylene glycol monoethyl ether, propylene glycol mono-t-butyl ether, propylene glycol mono-n-propyl ether, propylene glycol mono-iso-propyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl ether, dipropylene glycol mono-n-propyl ether, dipropylene glycol mono-iso-propyl ether, sorbitol, sorbitan, triacetin, and/or a mixture thereof.

In some embodiments, the at least one polyol that is optionally included is chosen from glycols or glycol ethers such as, e.g., monomethyl, monoethyl and monobutyl ethers of ethylene glycol, propylene glycol or ethers thereof such as, e.g., monomethyl ether of propylene glycol, butylene glycol, hexylene glycol, dipropylene glycol as well as alkyl ethers of diethylene glycol, e.g., monoethyl ether or monobutyl ether of diethylene glycol, or mixtures thereof. In some cases, a composition according to the present disclosure may include at least one polyol chosen from ethylene glycol, propylene glycol, butylene glycol, hexylene glycol, pentylene glycol, 1,3-propanediol, diethylene glycol, dipro-

pylene glycol, 1,4-butanediol, 1,5-pentanediol, hexane-1,6-diol, glycerin, diglycerin, caprylyl glycol, or a mixture thereof.

If present, the amount of the at least one polyol may vary but typically ranges from about 0.1% to about 15%, including all subranges therebetween, such as from about to about 15%, from about 0.1% to about 12%, from about 0.1% to about 10%, from about 0.1% to about 8%, from about 0.1% to about 5%, from about 0.1% to about 4%, from about 0.1% to about 3%, from about 0.1% to about 2%, from about 0.1% to about 1.5%, from about 0.1% to about 1%, from about 0.5% to about 15%, from about 0.5% to about 12%, from about 0.5% to about 10%, from about 0.5% to about 8%, from about to about 5%, from about 0.5% to about 4%, from about 0.5% to about 3%, from about 0.5% to about 2%, from about 0.5% to about 1.5%, from about 0.5% to about 1%, from about 1% to about 15%, from about 1% to about 12%, from about 1% to about 10%, from about 1% to about 9%, from about 1% to about 8%, from about 1% to about 7%, from about 1% to about 6%, from about 1% to about 5%, from about 1% to about 4%, from about 1% to about 3%, from about 1% to about 2%, from about 1.5% to about 15%, from about 1.5% to about 12%, from about 1.5% to about 10%, from about 1.5% to about 9%, from about 1.5% to about 8%, from about 1.5% to about 7%, from about 1.5% to about 6%, from about 1.5% to about 5%, from about 1.5% to about 4%, from about 1.5% to about 3%, or from about 1.5% to about 2% by weight, relative to the total weight of the composition. For example, the at least one polyol may be present in an amount ranging from about 1% to about 9%, such as about 1.5% to about 8.5% by weight, relative to the total weight of the composition.

Additional Components

Hair color-altering base compositions according to the disclosure may optionally comprise one or more additional components suitable for use in cosmetic compositions, and in particular suitable for altering the color of hair.

pH Adjusters

The hair color-altering base compositions may include one or more pH adjusters to increase or decrease the overall pH of the compositions. For example, one or more acids may be included to decrease the pH of the compositions. Examples of suitable acids for decreasing the pH of the compositions may include one or more acids, such as citric acid, acetic acid, and the like. The compositions may include one or more bases, such as sodium hydroxide, potassium hydroxide and the like, to increase the pH of the compositions to arrive at a desired pH value. Additional or alternative acids and bases that are suitable for adjusting the pH of the compositions are readily known to one of ordinary skill in the art.

The amount of the pH adjuster in the hair color-altering base compositions may be based on the desired pH of the final compositions and/or product. For example, the total amount of the pH adjuster may range from about 0.0001% to about 15%, based on the total weight of the composition. In some instances, the total amount of pH adjusters ranges from about 0.005% to about 10%, about 0.01% to about 5%, about 0.1% to about 1%, or about 0.1% to about 0.5% by weight, including ranges and sub-ranges therebetween, based on the total weight of the base composition. For instance, in one embodiment, the pH adjuster is about 0.1 M of sodium hydrate (NaOH).

Preservatives

One or more preservatives may be included in the hair color-altering compositions described herein for treating hair. Suitable preservatives include, but are not limited to, glycerin containing compounds (e.g., glycerin or ethylhexylglycerin or phenoxyethanol), benzyl alcohol, parabens (methylparaben, ethylparaben, propylparaben, butylparaben, isobutylparaben, etc.), sodium benzoate, benzoic acid, chlorhexidine digluconate, ethylenediamine-tetraacetic acid (EDTA), potassium sorbate, and/or grapefruit seed extract, or a mixture thereof. Other preservatives are known in the cosmetics industries and include salicylic acid, DMDM Hydantoin, Formaldahyde, Chlorphenesin, Triclosan, Imidazolidinyl Urea, Diazolidinyl Urea, Sorbic Acid, Methylisothiazolinone, Sodium Dehydroacetate, Dehydroacetic Acid, Quaternium-15, Stearalkonium Chloride, Zinc Pyrithione, Sodium Metabisulfite, 2-Bromo-2-Nitropropane, Chlorhexidine Digluconate, Polyaminopropyl biguanide, Benzalkonium Chloride, Sodium Sulfite, Sodium Salicylate, Citric Acid, Neem Oil, Essential Oils (various), Lactic Acid, Vitamin E (tocopherol), or mixtures thereof. In some cases, the hair color-altering base compositions may include one or more preservatives selected from the group consisting of sodium benzoate, benzoic acid, chlorhexidine digluconate, chlorhexidine dihydrochloride, salicylic acid, phenoxyethanol, methyl paraben, or mixtures thereof.

The total amount of the one or more preservatives, when present, may vary. In some cases, the total amount of the one or more preservatives is about 0.01% to about 5%, about 0.01% to about 4%, about 0.15% to about 1%, or about 1% to about 3%, by weight, relative to the total weight of the base composition.

Auxiliary Components

Hair color-altering base compositions according to the disclosure may optionally comprise any auxiliary component suitable for use in such compositions. Such components may include, but are not limited to, dyes/pigments other than the dyes described above, for example, pearl pigments, mica, and titanium dioxide, rheology modifying agents such as acrylic polymers, surfactants, polymers, film forming agents or polymers, humectants and moisturizing agents, fatty substances other than the fatty alcohols, fatty acids, and oils described above, emulsifying agents other than fatty substances, fillers, structuring agents, propellants, shine agents, conditioning agents, antioxidants or reducing agents, penetrants, sequestrants, fragrances, buffers, dispersants, plant extracts, opacifiers, vitamins, conditioning agents, for instance volatile or non-volatile, modified or unmodified silicones, ceramides, preserving agents, opacifiers, sunscreen agents, and antistatic agents. As such, optional auxiliary components will be chosen so as to minimize any detrimental effect to the advantages of the hair color bases and compositions described herein.

Optional auxiliary components may be present in an amount ranging up to about 15%, such as from about 0.001% to about 10%, from about 0.01% to about 5%, or from about 0.1% to about 3% by weight, relative to the total weight of the hair color-altering base composition.

In various embodiments, hair color-altering base compositions according to the present disclosure have a pH of greater than 7, such as a pH ranging from about 7.5 to about 13, from about 8 to about 13, from about 8.5 to about 13, from about 9 to about 13, from about 9.5 to about 13, from about 10 to about 13, from about 8 to about 12, from about 8 to about 11, from about 8 to about 10.5, from about 9 to about 13, from about 9 to about 12, from about 9 to about 11, from about 10 to about 11, or from about 10 to about 10.5, including all ranges and subranges therebetween. In one embodiment, the pH of the base composition is about 10.5.

In some embodiments, the hair color-altering base compositions according to the present disclosure are free or essentially free of cationic polymers.

Optionally, the compositions may comprise up to about 100% biodegradable, sustainable, and/or environmentally friendly raw materials, such as up to about 99%, up to about 98%, up to about 97%, up to about 96%, or up to about 95%.

Hair color-altering base compositions according to the disclosure are typically in the form of a cream, paste, or lotion, but may also be in the form of a serum, a gel, a gel cream, or the like. In some embodiments, the hair color-altering base compositions may be a rinse-off hair dye product, that can be used to lift hair color or provide desired color to the hair after being mixed with a developer composition comprising an oxidizing agent. Hair color-altering base compositions according to the disclosure are generally stable and can be stored at room temperature for at least 24 months.

Hair color-altering base compositions disclosed herein can be mixed with a developer composition (developing composition, or developer) that comprises an oxidizing agent, resulting in mixtures, i.e., hair color-altering compositions, that are suitable for applying onto the hair for altering the color of the hair, including lifting the color of hair and/or providing color to the hair, and at the same time, providing benefits such as maintaining and/or enhancing the strength of the hair, and reducing damage to hair due to chemical treatment during altering the color of the hair.

Developer Compositions

Developer compositions (also referred to as oxidizing compositions) can be mixed with hair color-altering base compositions according to the disclosure to prepare a composition for altering the color of the hair. Typically, a developer composition comprises at least one oxidizing agent and a cosmetically suitable carrier. Developer compositions that can be used to prepare a hair color-altering composition according to the disclosure are not limited, and can include, for example, any commercial developer composition as long as it includes at least one oxidizing agent.

In various embodiments, a suitable oxidizing agent may be chosen, for example, from peroxides, such as hydrogen peroxide and urea peroxide; persalts, such as persulfates, perborates, percarbonates, peroxygenated salts, etc., alkali metal bromates, alkali metal ferricyanides, alkali metal carbonates, or a mixture thereof. An oxidizing agent may also be chosen from one or more oxidation-reduction enzymes, such as laccases, peroxidases, and 2-electron oxidoreductases (such as uricase), optionally in the presence of their respective donor or cofactor.

In one embodiment, a suitable oxidizing agent may be chosen from persulfates and/or monopersulfates such as, for example, potassium persulfate, sodium persulfate, ammonium persulfate, as well as mixtures thereof. In one embodiment, the oxidizing agents in the present disclosure are chosen from hydrogen peroxide, potassium persulfate, sodium persulfate, and mixtures thereof.

In certain embodiments, hydrogen peroxide is used as an oxidizing agent. In certain situations, hydrogen peroxide may be present in an aqueous developer whose titer may range from 1 to 40 volumes, such as from 5 to 40 volumes, from 5 to 30 volumes, or from 5 to 20 volumes. In certain embodiments, the oxidizing component is a 10V, 20V, 30V, or 40V hydrogen peroxide developer composition.

The oxidizing agent may, in various embodiments, be present in the developer composition in an amount ranging from about 0.05% to about 50% by weight, such as from about 0.1% to about 30% by weight, from about 0.1% to about 20% by weight, about 1% to about 20%, about 1% to about 15%, about 1% to about 12%, about 3% to about 20%, about 3% to about 15%, about 3% to about 12%, about 5% to about 20%, about 5% to about 15%, about 5% to about 12%, about 7% to about 20%, about 7% to about 15%, about 7% to about 12%, about 9% to about 20%, about 9% to about 15%, or about 9% to about 12% by weight, based on the total weight of the developer composition.

The developer composition may contain at least one solvent, chosen from, for example water, organic solvents, or mixtures thereof. Suitable organic solvents for use in the developer composition, alone or in mixture with water, include but are not limited to ethanol, isopropyl alcohol, propanol, benzyl alcohol, phenyl ethyl alcohol, glycols and glycol ethers, such as propylene glycol, hexylene glycol, ethylene glycol monomethyl, monoethyl or monobutyl ether, propylene glycol and its ethers, such as propylene glycol monomethyl ether, butylene glycol, dipropylene glycol, diethylene glycol alkyl ethers, such as diethylene glycol monoethyl ether and monobutyl ether, ethylene glycol, propylene glycol, butylene glycol, hexylene glycol, propane diol, glycerin, hydrocarbons such as straight chain hydrocarbons, mineral oil, polybutene, hydrogenated polyisobutene, hydrogenated polydecene, polydecene, squalane, petrolatum, isoparaffins, or mixtures thereof.

The organic solvents for use in the developer compositions can be volatile or non-volatile compounds. The organic solvent may, for example, be present in an amount ranging from about 0.5% to about 70% by weight, such as from about 2% to about 60% by weight, such as from about 5 to about 50% by weight, relative to the total weight of the developer composition.

The developer compositions are typically aqueous, but may also be in the form of a powder, gel, liquid, foam, lotion, cream, mousse, or emulsion. For instance, in certain embodiments the developer composition is aqueous and is in the form of a liquid, cream, or emulsion. In alternative embodiments, the developer composition may be anhydrous or substantially anhydrous. The term "substantially anhydrous" means that the developer composition is either completely free of water or contains no appreciable amount of water, for example, no more than 5% by weight, or no more than 2% by weight, or no more than 1% by weight, based on the weight of the developer composition. It should be noted that this refers for example to bound water, such as the water of crystallization of the salts or traces of water absorbed by the raw materials used in the preparation of the compositions according to embodiments of the disclosure. When the developer composition is substantially anhydrous, the developer composition may comprise at least one solvent chosen from organic solvents described above.

The developer compositions may optionally include other components typically used in developer compositions, such as, for example, rheology-modifying agents, chelants, fatty substances, ceramides, pH adjusting agents, preservatives, fragrances, surfactants, etc.

The pH of the developer composition is typically below 7. In some embodiments, the pH of the developer composition may be below 4.

Hair Color-Altering Compositions

In non-limiting embodiments, the disclosure also provides hair color-altering compositions, which comprise components described above and at least one oxidizing agent. The hair color-altering compositions are typically prepared by mixing a hair color-altering base composition disclosed herein with a developer composition, for example at or near the time of use.

According to various embodiments, a hair color-altering base composition disclosed herein can be mixed with a developer composition in a weight ratio of hair color-altering base composition to developer that ranges from about 1:5 to about 5:1, such as from about 1:4 to about 4:1, about 1:3 to about 3:1, or about 1:2 to about 2:1, or is, for example, about 5:1, about 4:1, about 3:1, about 2:1, about 1.5:1, about 1:1, about 1:1.5, about 1:2, about 1:3, about 1:4, or about 1:5.

In various embodiments, the hair color-altering compositions according to the present disclosure may be free or essentially free of cationic polymers. In some embodiments, the compositions disclosed herein are free or essentially free of ammonia, salts thereof, and/or hydrates thereof. While in some other embodiments, the compositions disclosed herein may comprise ammonia, salts thereof, and/or hydrates thereof.

The pH of the hair color-altering composition resulting from mixing together the hair color-altering base composition and the developer composition is typically greater than 7, which can be adjusted to the desired value using acidifying/alkalizing agents that are well known in the art. In certain embodiments, the pH of the hair color-altering composition is from about 7 to about 12, such as from about 8 to about 12, from about 9 to about 12, from about 7 to about 11, from about 8 to about 11, from about 9 to about 11. In some embodiments, the hair color-altering composition has a pH ranges from about 10 to about 11.

II. Kits

The present disclosure also relates to kits comprising the base compositions and/or developer compositions described herein. The kits in various embodiments may comprise at least one container suitable for containing and/or dispensing the base compositions and/or developer compositions described herein. In some other embodiments, a kit may comprise a first container containing a hair color-altering base composition according to the disclosure, a second container comprising a developer comprising at least one oxidizing agent described above, and optionally, an additional separate container comprising a cosmetic composition, for example, a shampoo, a conditioner, a hair mask, a hair styling composition, or a hair treatment composition other than a developer or a base described above. The hair color-altering base composition and the developer composition contained in separate containers may be mixed prior to the application onto hair.

III. Methods

Compositions described herein can effectively alter the color of hair, while at the same time surprisingly provide fiber strength and/or minimize or reduce damage to the hair caused by chemical treatment. Therefore, another aspect of the disclosure relates to methods of using any of the compositions disclosed herein for altering the color of the hair, including lifting the color of hair and/or providing a desired color to the hair, while at the same time improving fiber integrity of the hair and/or minimizing or reducing damage to the hair caused by chemical treatment.

In various embodiments, the methods disclosed herein typically comprise applying to hair an effective amount of a hair color-altering composition disclosed herein. The hair color-altering composition is generally obtained at the time or near the time of use by mixing a hair color-altering base composition disclosed herein and a developer composition comprising at least one oxidizing agent. In some embodiments, the methods may further include mixing a hair color-altering base composition disclosed herein and a developer composition described herein at the time or near the time of use.

In various embodiments, before application of the compositions disclosed here, the hair may be bleached, shampooed, and/or rinsed. In some embodiments, before application of the hair color-altering composition to the hair, the hair may be first cleansed with a commercially available shampoo or be rinsed with water. The hair may be further conditioned and/or rinsed after shampooing and before application of the compositions disclosed herein. After the hair is shampooed, conditioned, and/or rinsed, the hair color-altering composition is then applied to the washed or rinsed hair when the hair is wet, damp, or moist. In some other embodiments, before applying the hair color-altering composition to the hair, the hair can optionally be moistened, damped, or wetted by water spray or using a wet towel, or by applying other treatment compositions that make the hair moist, damp, or wet. In some embodiments, after the application of the compositions disclosed to the hair, the hair may be further rinsed, shampooed, and/or conditioned one or more times.

As used herein, the term "effective amount" refers to any amount sufficient to provide a desired lifting or coloring effect. For example, in some embodiments, from about 0.1 grams to about 50 grams of a hair color-altering composition may be applied to the hair, depending on the specific product formulation, hair length, hair volume, and hair color. In some embodiments, about 0.1 grams (g) of the composition per gram of hair is applied to the hair. In some embodiments, about 0.5 grams (g) of the composition per gram of hair is applied to the hair. The composition applied to the hair may be distributed through the hair as desired, e.g. substantially evenly or uniformly massaged throughout the hair by combing through with fingers or a means such as a comb or the like.

After the hair color-altering composition is applied on to the hair, the composition may be allowed to remain on the hair for a period of time sufficient to impart the benefits provided by the composition ("leave-in period"), such as lifting effect or providing desired color or tone to the hair. For example, the hair color composition may be left on the hair for up to one hour, such as from about 1 minute to about 60 minutes, from about 1 minutes to about 45 minutes, from about 1 minute to about 30 minutes, from about 1 minute to about 20 minutes, from about 1 minute to about 15 minutes, from about 1 minute to about 10 minutes, from about 1 minute to about 5 minutes, from about 3 minutes to about 45 minutes, from about 5 minutes to about 30 minutes, or from about 10 minutes to about 20 minutes, and then rinsed off from the hair. One skilled in the art will, by considering various factors such as the starting color of the hair and the desired color to obtained, be able to determine an appropriate amount of time to leave the hair color-altering composition or mixture on the hair in order to achieve the desired alternation in hair color. If desired, the hair applied with coloring mixtures may be further shampooed and/or conditioned after the coloring mixtures are rinsed off the hair.

In some embodiments, a method disclosed herein is for permanently coloring or dyeing hair, while improving the strength and fiber integrity to the hair. In this case, a hair color-altering base composition may include one or more coloring agents such as oxidation dyes optionally combined with one or more couplers.

Having described the many embodiments of the present invention in detail, it will be apparent that modifications and variations are possible without departing from the scope of the disclosure defined in the appended claims. Furthermore, it should be appreciated that all examples in the present disclosure, while illustrating many embodiments of the disclosure, are provided as non-limiting examples and are, therefore, not to be taken as limiting the various aspects so illustrated. It is to be understood that all definitions herein are provided for the present disclosure only.

As used herein, the terms "comprising," "having," and "including" (or "comprise," "have," and "include") are used in their open, non-limiting sense. The phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps and those that do not materially affect the basic and novel characteristics of the compositions.

In this application, the use of the singular includes the plural unless specifically stated otherwise. The singular forms "a," "an," "the," and "at least one" are understood to encompass the plural as well as the singular unless the context clearly dictates otherwise. The expression "one or more" means "at least one" and thus includes individual components as well as mixtures/combinations. Likewise, the term "a salt thereof" also relates to "salts thereof." Thus, where the disclosure refers to "an element selected from the group consisting of A, B, C, D, E, F, a salt thereof, or mixtures thereof," it indicates that that one or more of A, B, C, D, and F may be included, one or more of a salt of A, a salt of B, a salt of C, a salt of D, a salt of E, and a salt of F may be included, or a mixture of any two of A, B, C, D, E, F, a salt of A, a salt of B, a salt of C, a salt of D, a salt of E, and a salt of F may be included.

The term "and/or" should be understood to include both the conjunctive and the disjunctive. For example, "lactic acid and/or salts thereof" means "lactic acid and salts thereof" as well as "lactic acid or salts thereof," and expressly covers instances of either without reference to the other.

As used herein, the phrases "and mixtures thereof," "and a mixture thereof," "and combinations thereof," "and a combination thereof," "or mixtures thereof," "or a mixture thereof," "or combinations thereof," and "or a combination thereof," are used interchangeably to denote that the listing of components immediately preceding the phrase, such as "A, B, C, D, or mixtures thereof" signify that the component (s) may be chosen from A, from B, from C, from D, from A+B, from A+B+C, from A+D, from A+C+D, etc., without limitation on the variations thereof. Thus, the components may be used individually or in any combination thereof.

For purposes of the present disclosure, it should be noted that to provide a more concise description, some of the quantitative expressions given herein are not qualified with the term "about." It is understood that whether the term "about" is used explicitly or not, every quantity given herein is meant to refer to the actual given value, and it is also meant to refer to the approximation to such given value that would reasonably be inferred based on the ordinary skill in the art, including approximations due to the experimental and/or measurement conditions for such given value.

All ranges and amounts given herein are intended to include sub-ranges and amounts using any disclosed point as an end point, and all endpoints are intended to be included unless expressly stated otherwise. Thus, a range of "1% to 10%, such as 2% to 8%, such as 3% to 5%," is intended to encompass ranges of "1% to 8%," "1% to 5%," "2% to 10%," and so on. All numbers, amounts, ranges, etc., are intended to be modified by the term "about," whether or not expressly stated, unless expressly stated otherwise. Similarly, a range given of "about 1% to 10%" is intended to have the term "about" modifying both the 1% and the 10% endpoints. The term "about" is used herein to indicate a difference of up to +/−10% from the stated number, such as +/−9%, +/−8%, +/−7%, +/−6%, +/−5%, +/−4%, +/−3%, +/−2%, or +/−1%. Likewise, all endpoints of ranges are understood to be individually disclosed, such that, for example, a range of 1:2 to 2:1 is understood to disclose a ratio of both 1:2 and 2:1.

As used herein, if a component is described as being present "in an amount up to" a certain amount, it is intended that such component is, in fact, present in the composition, i.e. is present in an amount greater than 0%.

All amounts given herein are relative to the amount of active material, unless otherwise indicated.

All percentages, parts and ratios herein are based upon the total weight of the compositions of the present disclosure, unless otherwise indicated.

The term "altering the color" or "color-altering" as used herein refers to lifting or lightening the color of hair. It can also refer to dyeing or coloring hair or depositing color onto the hair. In certain instances, it refers to lifting or lightening the color of hair and depositing color onto the hair at the same time.

As used herein, the terms "applying a composition onto keratin fibers" and "applying a composition onto hair" and variations of these phrases are intended to mean contacting the keratin fibers including hair, with at least one of the compositions of the disclosure, in any manner. It may also mean contacting the keratin fibers in an effective amount of the composition.

As used herein, "cosmetic composition" encompasses many types of compositions for application to keratin materials such as skin or hair, for example, hair lotions, hair creams, hair gel creams, hair conditioners, hair masques (masks), etc., which can be used either as leave-on or rinse-off treatments or products.

As used herein, the term "inorganic" means a material that does not comprise carbon.

As used herein, the term "organic" means a material that is produced substantially without or essentially without the use of synthetic materials.

As used herein, the term "salts" may include salts having a counter-ion such as an alkali metal, alkaline earth metal, or ammonium counterion. This list of counterions, however, is non-limiting. Salts also include a dissociated form of a compound, e.g. in an aqueous solution.

Bonding agents should be understood to include salts of such agents, whether or not specifically stated. Thus, a "first bonding agent chosen from lactic acid" should be understood to include salts of lactic acid. Likewise, a "second bonding agent chosen from glycine" should be understood to include salts of glycine.

As used herein, the term "stable" refers to that the composition does not exhibit phase separation and/or crystallization for a period of time, for example, for at least 1 day (24 hours), one week, one month, one year, or two years.

As used herein, the terms "substantially free" or "essentially free" mean the specific material may be present in small amounts that do not materially affect the basic and novel characteristics of the compositions according to the disclosure. For instance, there may be less than 2% by weight of a specific material added to a composition, based on the total weight of the compositions (provided that an amount of less than 2% by weight does not materially affect the basic and novel characteristics of the compositions

according to the disclosure. Similarly, the compositions may include less than 2%, less than 1.5%, less than 1%, less than 0.5%, less than 0.1%, less than 0.05%, or less than or none of the specified material. Furthermore, all components that are positively set forth in the instant disclosure may be negatively excluded from the claims, e.g., a claimed composition may be "free," "essentially free" (or "substantially free") of one or more components that are positively set forth in the instant disclosure. The terms "free," "substantially free," and "essentially free" as used herein may also mean that the specific material is not added to the composition but may still be present in a raw material that is included in the composition. For example, a composition according to the disclosure may not include an added wax but may include a pigment that is coated with a wax and still be considered "free," "substantially free," or "essentially free" of waxes.

As used herein, the term "surfactants," as well as any specifically identified surfactants, includes salts of the surfactants even if not explicitly stated.

As used herein, the term "synthetic" means a material that is not of natural origin. The term "natural" and "naturally-sourced" means a material of natural origin, such as derived from plants, which also cannot be subsequently chemically or physically modified. "Plant-based" means that the material came from a plant.

As used herein, the term "treat" (and its grammatical variations) refers to the application of the compositions of the present disclosure onto the surface of keratin materials, such as hair.

Unless otherwise expressly stated, it is in no way intended that any method set forth herein be construed as requiring that its steps be performed in a specific order. Accordingly, where a method claim does not expressly recite an order to be followed by its steps or it is not specifically stated in the claims or descriptions that the steps are to be limited to a specific order, it is no way intended that any particular order be inferred.

EXAMPLES

The following examples are intended to be non-limiting and explanatory in nature only. In the Examples, amounts in each composition are expressed in percentage by weight (wt %) of active materials, unless otherwise defined, relative to the total weight of the composition.

Example 1—Hair Color-Altering Base Compositions

Exemplary base compositions 1A-1G according to the present disclosure and comparative compositions C1-C4 were prepared by mixing the components according to the formulations set forth in Table 1.

TABLE 1

	Inventive								Comparative			
	1A	1B	1C	1D	1E	1F	1G	1H	C1	C2	C3	C4
LACTIC ACID	0.9	1.8	1.8	1.8	0.9	0.9	0.9	1.35		1.8		
ARGININE	2			1	3	0.5	3	5			2	
GLYCINE		2	1		3	2	1.5					2
OLEYL ALCOHOL	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
CETEARYL ALCOHOL	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
OLEIC ACID	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
BUTYROSPERMUM PARKII (SHEA) BUTTER	4	4	4	4	4	4	4	4	4	4	4	4
CETEARYL GLUCOSIDE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
AMMONIUM HYDROXIDE	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.57	4.53	4.53
ETHANOLAMINE	1.63	0.63	0.63	0.63	0.63	0.63	1.63	1.63	0.63	1.63	0.63	0.63
XANTHAN GUM	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
TETRASODIUM GLUTAMATE DIACETATE	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
PROPANEDIOL	5	5	5	5	5	5	5	5	5	5	5	5
GLYCERIN	5	5	5	5	5	5	5	5	5	5	5	5
pH ADJUSTER	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
WATER	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS

The pH of each composition was about 10 to about 11. All compositions were in the form of a cream and were stable for at least 48 hours after being prepared.

Example 2—Developer Composition

An exemplary cream 20V developer composition D set forth in Table 2 was prepared. The developer had a pH at 25° C. of about 2.2 (±0.2).

TABLE 2

	Developer Composition D
TRIDECETH-2 CARBOXAMIDE MEA	0.85
TETRASODIUM ETIDRONATE	0.06
SODIUM SALICYLATE	0.035
GLYCERIN	0.5
CETEARYL ALCOHOL	2.28
CETEARETH-25	0.57
HYDROGEN PEROXIDE	6
TETRASODIUM PYROPHOSPHATE	0.04
WATER	QS

Example 3—Evaluation of Integrity of Hair Treated with Compositions 1A-1F

Fiber integrity of hair treated with inventive compositions 1A-1F was evaluated by measuring the elastic modulus and tensile toughness of the hair in comparison hair treated with comparative compositions C1-C4.

Elastic modulus represents a measure of the hair's spring-like structure (elasticity). Elastic modulus provides fiber deformation information, so fibers with higher elastic modulus are more resistant to deform. As used herein, "tensile toughness" refers to a property indicative of the hair fiber's resistance to fracture when a crack or other stress-concentrating defect is present. To be tough, a hair fiber must be both strong and ductile. Tensile toughness is usually measured in units of Joule per cubic meter ($J \cdot m^{-3}$) in the International System of Units (SI) system. The higher the toughness, the more resistant to breakage.

Experiments were performed on natural hair swatches with a length of about 12 cm and 50 fibers per swatch. At or near the time of application, inventive compositions 1A-1F and comparative composition C1-C4 of Table 1 were respectively mixed with developer D of Table 2 in a mix ratio of about 1:1, resulting in corresponding mixtures, i.e., hair color-altering compositions of 1A+D, 1B+D, 1C+D, 1D+D, 1E+D, 1F+D, C1+D, C2+D, C3+D, and C4+D.

The same amount of each of the above mixtures was applied to a separate hair swatch that was pre-washed with a shampoo five times and air dried. Each mixture applied on the hair was allowed to remain on the hair for about 35 minutes at room temperature. Subsequently, the hair was rinsed under running water for about 30 seconds and blow dried for 30 seconds.

Hair swatches prepared as above and an untreated hair swatch used as control were allowed to equilibrate for 24 hours at 45% relative humidity and room temperature, and subsequently subjected to tensile testing using a Miniature Tensile Tester (MTT680 from Dia-Stron Ltd) when the hair swatches were in the dry state at a traction speed of about 10 mm/min when the hair swatches were in the dry state. Elastic modulus and Toughness of the hair were measured. Obtained measurements were statistically analyzed using a two-sample t-test assuming equal variances, where the statistical significance level was set at $p<0.05$.

The results of the elastic modulus of the above treated hair swatches are illustrated in FIG. **1**. As can be seen in FIG. **1**, the hair treated with mixtures C2+D, C3+D, or C4+D, which includes lactic acid, arginine, or glycine alone, and the hair treated with mixture C1+D, where no bonding agent is included, did not have significant difference in elastic modulus. In contrast, the hair treated with mixture 1A+D, 1B+D, 1C+D, 1D+D, 1E+D, or 1F+D, which included lactic acid and arginine and/or glycine, had significantly higher elastic modulus than the hair treated with mixture C1+D. The results demonstrate that the inventive compositions, which include a synergistic combination of lactic acid and one or more amino acids such as arginine and/or glycine, significantly improved the fiber's resistance to deform.

The results of the tensile toughness of the above treated hair swatches are illustrated in FIG. **2**. As can be seen in FIG. **2**, the hair treated with mixtures C2+D, C3+D, or C4+D, which includes lactic acid, arginine, or glycine alone, and the hair treated with mixture C1+D, where no bonding agent is included, did not have significant difference in toughness. In contrast, the hair treated with mixture 1A+D, 1B+D, 1C+D, 1D+D, 1E+D, or 1F+D, which included lactic acid and arginine and/or glycine, had significantly higher toughness than the hair treated with mixture C1+D. The results demonstrate that the inventive compositions, which include a synergistic combination of lactic acid and one or more amino acids such as arginine and/or glycine, significantly improved the fiber's resistance to breakage.

Example 4—Evaluation of Integrity of Hair Treated with Composition 1G

Fiber integrity of hair treated with inventive composition 1G, which encompasses a bonding system including lactic acid, arginine, and glycerin in an amount ratio of about 1:3:1.5 (lactic acid:Arginine:Glycine) incorporated in a hair color altering composition, was evaluated by tensile testing in comparison hair treated with comparative composition C1, where no bonding agent is included.

4.1 Hair Treatment and Evaluation of Treated Hair

Experiments were performed on natural virgin hair swatches with a length of about 12 cm and 50 fibers per swatch. At or near the time of application, inventive composition 1G and comparative composition C1 of Table 1 were respectively mixed with developer D of Table 3 in a mix ratio of about 1:1 to obtain mixtures (hair color-altering compositions) 1G+D and C1+D.

In a first testing, same amount of each of the above mixtures 1G+D and C1+D was applied to a separate hair swatch that was pre-washed with a shampoo five times and air dried before the application of the mixtures. The bath ratio of the mixture 1G+D and C1+D respectively applied to the hair was about 9 g of each mixture per 3 g of hair. Each mixture applied on the hair was allowed to remain on the hair for about 35 minutes at room temperature. After then, the hair was rinsed under flowing water for about 30 seconds and blow dried for 30 seconds.

In a second testing, same amount of each of the above mixtures 1G+D and C1+d was applied to a separate hair swatch that was pre-washed with a shampoo five times and air dried before the application of the mixtures. The bath ratio of the mixture 1G+D and C1+D respectively applied to the hair was about 9 g of each mixture per 3 g of hair. Each mixture applied on the hair was allowed to remain on the hair for about 35 minutes at room temperature. After then, the mixtures applied on the hair were rinsed off and the hair swatches were washed with the shampoo once. After shampooing, the treated hair swatches were rinsed and blow dried for 30 seconds.

Hair swatches prepared as above and an untreated hair swatch used as control were allowed to equilibrate for 24 hours at 45% relative humidity and room temperature, and subsequently subjected to tensile testing using a Miniature Tensile Tester (MTT680 from Dia-Stron Ltd) when the hair swatches were in the dry state at a traction speed of about 10 mm/min. Break stress, plateau stress, tensile toughness, and/or elastic modulus (Young's modulus) of the treated hair were measured. Obtained measurements were statistically analyzed using a two-sample t-test assuming equal variances, where the statistical significance level was set at $p<0.05$.

Break stress represents the force/area needed to break the hair fiber. A higher break stress represents a stronger and stiffer hair fiber. The elastic modulus represents a measure of the hair's spring-like structure (elasticity). Higher elastic modulus shows that the hair is more elastic (less brittle).

4.2 Results

The results of the break stress, plateau stress, and elastic modulus of the hair treated in the first testing are shown in FIGS. **3-5**. FIG. **3** illustrates the break stress of the treated

hair, FIG. **4** illustrates the plateau stress of the treated hair, and FIG. **5** illustrates the elastic modulus of the treated hair. As shown in FIGS. **3**, **4**, and **5**, the hair treated with mixture 1G+D had statistically, significantly higher break stress, plateau stress, and elastic modulus ($p<0.05$), indicating that the hair treated with mixture 1G+D was not brittle and could withstand higher stresses, compared to the hair treated with mixture C1+D.

The results of elastic modulus and plateau stress of the hair treated in the second testing are shown in FIGS. **6** and **7**. As shown in FIG. **6** and FIG. **7**, compared to the untreated hair, the hair treated with comparative mixture C1+D had decreased elastic modulus and plateau stress, indicating that the hair treated with mixture C1+D was damaged and had impaired integrity due to the chemical treatment for altering the color of the hair. In contrast, the hair treated with mixture 1G+D did not show decrease in elastic modulus compared to the untreated hair and had a significantly improved plateau stress compared to the untreated hair and the hair treated with mixture C1+D.

The above results demonstrated that the bonding system in composition 1G, which comprises lactic acid, arginine, and glycine in with a weight ratio of lactic acid to arginine and to glycine of about 1:3:1.5, significantly improved the fiber integrity of the hair. The benefit provided by composition 1G was also surprisingly found to be lasting. The integrity was maintained even after the treated hair was further shampooed at least once.

Example 5—Evaluation of Integrity of Hair Treated with Compositions 1A and 1H

Fiber integrity of hair treated with inventive compositions 1A and 1H was evaluated by tensile testing (MTT testing) in comparison hair treated with comparative composition C1, where no bonding agent is included, in the same ways described in Example 5 for testing composition 1G. Compositions 1A and 1H include lactic acid and arginine in different amounts, where the amount of lactic acid was less than the amount of arginine.

Obtained results showed that hair respectively treated with mixtures 1A+D and 1H+D had surprisingly significantly higher elastic modulus, plateau stress, and break stress compared to the hair treated with C1+D, indicating that compositions 1A and 1H improve fiber integrity of the treated hair. Unexpectedly, the effect also lasted after the treated hair was shampooed at least once.

It will be apparent to those skilled in the art that various modifications and variations can be made in the compositions and methods according to the disclosure without departing from the spirit or scope of the disclosure. Thus, it is intended that the disclosure cover such modifications and variations and their equivalents.

The invention claimed is:

1. A composition for altering the color of keratin fibers comprising:

(a) a bonding system comprising:

(i) at least one first bonding agent chosen from lactic acid and/or salts thereof; and

(ii) at least one second bonding agent chosen from amino acids and/or salts thereof;

(b) at least one fatty alcohol;

(c) at least one fatty acid;

(d) at least one alkyl polyglucoside;

(e) at least one alkalizing agent; and

(f) at least one solvent comprising water;

wherein the pH of the composition is greater than 7, and wherein the composition is essentially free of cationic polymers.

2. The composition of claim **1**, wherein the composition further comprises from about 0.0001% to about 10% by weight, relative to the total weight of the composition, of at least one hair color-altering agent chosen from oxidative dyes, couplers, or combinations thereof.

3. The composition of claim **1**, wherein the total amount of lactic acid and/or salts thereof ranges from about 0.1% to about 5% by weight, relative to the total weight of the composition.

4. The composition of claim **1**, wherein the total amount of the second bonding agent(s) ranges from about 0.1% to about 12% by weight, relative to the total weight of the composition.

5. The composition of claim **1**, wherein the at least one second bonding agent is chosen from glycine, arginine, salts thereof, or mixtures thereof.

6. The composition of claim **1**, wherein the composition comprises arginine and/or salts thereof in an amount ranging from about 0.1% to about 7% by weight, relative to the total weight of the composition.

7. The composition of claim **1**, wherein the composition comprises glycine and/or salts thereof in an amount ranging from about 0.1% to about 5% by weight, relative to the total weight of the composition.

8. The composition of claim **1**, wherein the composition comprises:

from about 0.5% to about 5% of lactic acid;

from about 1% to about 7% of arginine; and

from about 1% to about 5% of glycine;

wherein all amounts are by weight, relative to the total weight of the composition.

9. The composition of claim **1**, wherein the composition comprises lactic acid, arginine, and glycine, and wherein the weight ratio of lactic acid:arginine:glycine is about 1:3:1.5.

10. The composition of claim **1**, wherein:

the at least one fatty alcohol is chosen from decyl alcohol, undecyl alcohol, dodecyl alcohol, myristyl alcohol, lauryl alcohol, cetyl alcohol, stearyl alcohol, cetearyl alcohol, isostearyl alcohol, isocetyl alcohol, behenyl alcohol, linalool, oleyl alcohol, isotridecyl alcohol, cis-4-t-butylcyclohexanol, myricyl alcohol, or mixtures thereof; and

the total amount of fatty alcohol(s) ranges from about 0.5% to about 25% by weight, relative to the total weight of the composition.

11. The composition of claim **1**, wherein:

the at least one fatty acid is chosen from myristic acid, lauric acid, palmitic acid, stearic acid, behenic acid, arichidonic acid, oleic acid, isostearic acid, sebacic acid, or mixtures thereof; and

the total amount of fatty acid(s) ranges from about 0.5% to about 15% by weight, relative to the total weight of the composition.

12. The composition of claim **1**, further comprising at least one vegetable oil, wherein the total amount of vegetable oil(s) ranges from about 0.5% to about 15% by weight, relative to the total weight of the composition.

13. The composition of claim **1**, wherein the total amount of alkyl polyglucoside(s) ranges from about 0.05% to about 5% by weight, relative to the total weight of the composition.

14. The composition of claim **1**, wherein:

the at least one alkalizing agent is chosen from ammonia, alkanolamines, salts thereof, hydrates thereof, or mixtures thereof; and

the total amount of alkalizing agent(s) ranges from about 2% to about 12% by weight, relative to the total weight of the composition.

15. The composition of claim **1**, further comprising at least one thickening agent, wherein the total amount of thickening agent(s) ranges from about 0.05% to about 5% by weight, relative to the total weigh of the composition.

16. The composition of claim **1**, further comprising at least one polyol, wherein the total amount of polyol(s) is at least 0.5% by weight, relative to the total weight of the composition.

17. A composition for altering the color of hair comprising:

(a) a bonding system comprising:

(i) at least one first bonding agent chosen from lactic acid and/or salts thereof, wherein the total amount of lactic acid and salts thereof ranges from about 0.1% to about 5%; and

(ii) at least one second bonding agent chosen from (a) glycine and/or salts thereof, and/or (b) arginine and/or salts thereof, wherein, if present, the total amount of glycine and salts thereof ranges from about 0.1% to 5%, and wherein, if present, the total amount of arginine and salts thereof ranges from about 0.1% to 7%;

(b) at least one fatty alcohol;

(c) at least one fatty acid;

(d) from about 0.05% to about 5% of at least one alkyl polyglucoside;

(e) at least one alkalizing agent;

(f) at least one hair color-altering agent chosen from oxidative dyes, couplers, or combinations thereof;

(g) at least one solvent comprising water;

(h) optionally, at least one vegetable oil;

(i) optionally, at least one thickening agent

(j) optionally, at least one polyol; and

wherein all amounts are by weight, relative to the total weight of the composition;

wherein the pH of the composition is greater than 7; and

wherein the composition is essentially free of cationic polymers.

18. A method for altering the color of hair comprising:

applying to the hair a hair color-altering composition; and

rinsing the hair color-altering composition from the hair after a leave-in period;

wherein the hair color-altering composition comprises:

(a) a bonding system comprising:

(i) at least one first bonding agent chosen from lactic acid and/or salts thereof; and

(ii) at least one second bonding agent chosen from amino acids and/or salts thereof;

(b) at least one fatty alcohol;

(c) at least one fatty acid;

(d) at least one alkyl polyglucoside;

(e) at least one alkalizing agent; and

(f) at least one hair color-altering agent chosen from oxidative dyes, couplers, or combinations thereof;

(g) at least one oxidizing agent;

(h) at least one solvent comprising water;

(h) optionally, at least one vegetable oil;

(i) optionally, at least one thickening agent; and

(j) optionally, at least one polyol;

wherein the pH of the composition is greater than 7, and

wherein the composition is essentially free of cationic polymers.

19. The composition of claim **16**, wherein the at least one polyol is chosen from ethylene glycol, propylene glycol, butylene glycol, hexylene glycol, pentylene glycol, diethylene glycol, dipropylene glycol, 1,3 propanediol, glycerin, polyethylene glycols, or mixtures of two or more thereof.

20. The composition of claim **1**, wherein the at least one alkyl polyglucoside is chosen from cetearyl glucoside.

* * * * *